CLASS I AREA AIR QUALITY MODELING REPORT
SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
PEE DEE CONSTRUCTION SITE

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1. EXECUTIVE SUMMARY

South Carolina Public Service Authority, also known as Santee Cooper, is planning to construct a new coal-fired power plant located near Kingsburg, South Carolina. The plant would consist of combustion boiler technology and ancillary equipment to produce steam for the generation of electricity. Only the emissions from the combustion boiler equipment are expected to have a significant impact on the Class I areas, and thus other sources are excluded from this portion of the modeling analysis.

The scope of the project will require an air quality permit issued under the Prevention of Significant Deterioration (PSD) permitting rules as facility emissions exceed the major source threshold for several PSD pollutants.

Air quality modeling analyses of impacts on federally protected Class I areas are an essential component of PSD review, and are performed to demonstrate compliance with PSD Class I Increment standards and air quality related values (AQRV) thresholds for regional haze and deposition. The CALPUFF modeling system is currently the recommended model for assessment of long-range pollutant transport and chemical transformation. This Class I modeling report has been prepared for Fish and Wildlife Service's (FWS)'s review as the Federal Land Manager (FLM) of Cape Romain National Wildlife Refuge (NWR), approximately 100 km to the south of the proposed facility, along South Carolina's coast.

This Class I modeling report is also provided to South Carolina Department of Health and Environmental Control (DHEC) for review as part of the PSD application review process.

The modeling methods used are consistent with the Interagency Workgroup on Air Quality Modeling (IWAQM) *Phase 2 Summary Report*, the Federal Land Managers' Air Quality Related Values Workgroup (FLAG) *Phase I Report*, the U.S. EPA's *Guideline on Air Quality Mo*dels (*Guideline*), and the U.S. EPA's *Regional Haze Regulations and Guidelines for Best Available Retrofit Technology* and communication between Santee Cooper, Trinity Consultants (Trinity) and the FLM.[1,2,3,4,5].

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[1] U.S. EPA, *IWAQM Phase 2 Summary Report and Recommendations for Modeling Long-Range Transport Impacts*, Research Triangle Park, North Carolina, EPA-454/R-95-006, 1995.

[2] U.S. Forest Service – Air Quality Program, National Park Service – Air Resources Division, U.S. Fish and Wildlife Service – Air Quality Branch, *Phase I Report of the Federal Land Managers' Air Quality Related Values Workgroup (FLAG)*, December 2000.

[3] 40 CFR Part 51, Appendix W (Revised, April 15, 2003).

[4] U.S. EPA, *Regional Haze Regulations and Guidelines for Best Available Retrofit Technology*, June 15, 2005.

[5] Modeling protocol and addendums submitted to FLM on March 17, 2006, April 10, 2006, and May 26, 2006. March 22, 2006 meeting between Santee Cooper, Trinity Consultants, and the FLM.

The Class I air quality analyses demonstrate that the proposed project will neither cause nor contribute to an exceedance of a Class I PSD Increment standard, nor cause adverse impacts on AQRV at Cape Romain.

The remainder of this modeling report is organized as follows. Section 2 provides a brief description of the facility and the proposed project. Section 3 describes the procedural and technical guidance for conducting Class I area analyses. Section 4 describes the approach for CALPUFF modeling, including the data resources and technical modeling options used in the CALMET, CALPUFF, and CALPOST analyses. Section 5 provides the results of the analyses.

2. Facility and Project Description

This section describes the overall operations of the Pee Dee facility, and summarizes PSD permitting applicability of the proposed project. Santee Cooper proposes to construct a coal-fired generating facility at the Pee Dee site. The cooling towers and ancillary sources in operation at the facility will not have a significant impact on the Class I areas of concern due to their relatively low emissions and low height of release, and thus are not included in the modeling. In addition, the auxiliary boiler at the site is not modeled, as it will not be utilized when the boilers are in full operation. With the recent shortages in natural gas supplies, the proposed clean coal-fired power generating station will provide an important source of power that is both reliable and cost-effective and that will have minimal impacts on the environment.

2.1 Site Description

The new plant will be on 2,700+ acres of land near Kingsburg, SC, approximately 40 km to the southeast of Florence, SC. The Great Pee Dee River borders the northern and eastern edges of the site. There are rural lands to the south and west of the site.

2.2 Emissions

The following pollutant emissions are relevant for Class I modeling: sulfur dioxide (SO_2), oxides of nitrogen (NO_X), particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), and sulfuric acid (H_2SO_4). The emissions from the combustion boiler equipment will be vented through a single stack with two flues. Table 2-1 summarizes the emission rates and stack parameters used in the Class I modeling. Emissions shown are for both boilers.

Table 2-1. Coal Boiler Emissions and Stack Parameters

Parameter	Value	Units
Stack Height	650	feet
Stack Diameter	25	feet
Exit Velocity	60	feet/s
Exit Temperature	122	°F
SO_2 Emissions	1,254	lb/hr
NO_X Emissions	684	lb/hr
Total PM_{10} (filterable + condensable)	205	lb/hr
Sulfuric Acid Emissions	68	lb/hr

2.2.1 PM Speciation

Modeling of visibility impairment due to emissions requires that the components of the exhaust stream be speciated because different size and phases of particulate matter affect visibility to varying extents. The amount by which a mass of a certain species scatters or absorbs light is termed the extinction efficiency or coefficient, and ranges from values of 0.6 m^2/g for coarse particulate matter to 10 m^2/g for elemental carbon for non-hygroscopic particles. Fine particulate matter and organic aerosols scatter light with intermediate efficiencies, and ammonium sulfate and ammonium nitrate (that forms from precursor SO_2 and NO_X emissions in the presence of ambient ammonia) are particularly efficient light scatters in the presence of ambient water vapor.

Speciated emissions of PM associated with coal combustion at the Pee Dee site were estimated based on engineering estimates, Best Available Control Technology (BACT) limits, and AP-42 emissions data. Total PM_{10} (filterable plus condensable) emissions are based on a BACT limit of 0.018 lb/MMBtu. Non-sulfate PM_{10} condensable emissions are estimated by AP-42 at 0.003 lb/MMBtu. Sulfate, a portion of the condensable emissions has a BACT limit of 0.006 lb/MMBtu. As sulfate has a higher extinction efficiency (three times a relative humidity function [f(RH]) than organic aerosols (four), condensable emissions were assumed equal to sulfate emissions. Emissions are further speciated for inclusion in CALPUFF modeling as shown in Table 2-2.

TABLE 2-2. SPECIATED PM EMISSION RATES

Category	CALPUFF Abbreviation	% of PM filterable	% of PM Condensable	Emissions - 2 Units (lb/hr)
PM Coarse	PMC	56.7%	-	77.6
PM Fine	PMF	39.6%	-	54.2
Organic Carbon	OC	-	-	-
Elemental Carbon	EC	3.7%	-	5.1
Ammonium Sulfate	SO_4		100%	68.4

Filterable PM emissions were speciated into $PM_{2.5\text{-}10}$ and $PM_{2.5}$ based on size distribution data in AP-42, Table 1-1.6, *Cumulative Particle Size Distribution and Size-Specific Emission Factors for Dry Bottom Boilers Burning Pulverized Bituminous and Subbituminous Coal.*[6] According to AP-42 data, 56.7% of filterable PM_{10} is greater than 2.5 microns for units with electrostatic precipitators (ESP). All of the $PM_{2.5\text{-}10}$ is classified as PM Coarse (PMC). Of the 43.3% filterable $PM_{2.5}$ emissions, 39.6% were classified as PM Fine (PMF) and 3.7% were allocated to elemental carbon (EC). The value of 3.7% for elemental carbon is based on Table 6 of EPA's January 2002 DRAFT *Catalog of Global Emissions Inventories and Emission Inventory Tools for Black Carbon*.

[6] U. S. EPA, AP-42, *Compilation of Air Emissions Factors* (5th Edition), Section 1.1 Bituminous and Subbituminous Coal Combustion.

The size for all speciated PM, except PMC is assumed to be 0.48 μm with a standard deviation of two. The PMC particle size distribution has a mean of 7.5 μm with a standard deviation of two. These values are estimated based on a bimodal size distribution and AP-42 data on the size of coal combustion PM.

2.2.2 CLASS I INCREMENT INVENTORY

In addition to evaluation of impacts from Santee Cooper, emissions from regional sources are included in modeling for pollutants that exceed the Class I significance level. For SO_2 a regional emissions inventory was prepared. Unlike Class II regional inventories, there are no specific guidelines for source inclusion for Class I Increment. Based on conversations with the DHEC[7] and past analyses submitted for Cape Romain, a regional inventory was developed based on the following guidelines:

1. Develop a list of all increment consumers and expanders from the eastern-half of South Carolina and any counties in North Carolina within 100 km of the Pee Dee site. A list of included counties is shown in Table 2-3.
2. Include all increment sources less than 100 km from Cape Romain
3. For sources between 100 km and 200 km from Cape Romain, include sources if the facility total increment potential emissions[8] are greater than 100 tpy of any PSD pollutant.
4. For sources greater than 200 km from Cape Romain, include sources if the facility total increment potential emissions are greater than 250 tpy of any PSD pollutant.

TABLE 2-3. COUNTIES REVIEWED FOR SO_2 INCREMENT

Bladen, NC	Charleston, SC	Horry, SC
Columbus, NC	Chesterfield, SC	Jasper, SC
Robeson, NC	Clarendon, SC	Kershaw, SC
Scotland, NC	Colleton, SC	Lee, SC
Aiken, SC	Darlington, SC	Lexington, SC
Allendale, SC	Dillon, SC	Marion, SC
Bamberg, SC	Dorchester, SC	Marlboro, SC
Barnwell, SC	Fairfield, SC	Orangeburg, SC
Beaufort, SC	Florence, SC	Richland, SC
Berkeley, SC	Georgetown, SC	Sumter, SC
Calhoun, SC	Hampton, SC	Willamsburg, SC

[7] Personal communication between Mr. John Glass (DHEC) and Ms. Maria Zufall (Trinity Consultants), February 6, 2006.

[8] Facility total increment emissions are the sum of the absolute values of increment emissions to account for both increment expanders and consumers. Increment emissions are those provided by the state agency.

Note that emissions from other Santee Cooper sources (Cross and Winyah Generating stations) were updated to reflect the most recent permit information and do not match DHEC's data. In addition, separate 3-hour and 24-hour runs were included for Santee Cooper's Cross Generating Station, as the facility has separate 3-hour and 24-hour limits. Also note that a line source was excluded from the inventory due to lack of source data. The source at Alcoa-Mt. Holly emitted only 0.011 lb/hr. A table of SO_2 sources included in the inventory is included in Appendix A and a plot of the source locations is provided in Figure B-1.

Two principal air quality impacts are considered for Class I areas: PSD Increments for NO_X, SO_2, and PM_{10}, and air quality related values (AQRV). This section of the report describes the procedural requirements for assessing the impacts of Santee Cooper's Pee Dee facility on Cape Romain. Note that the FWS also manages Swanquarter NWR, approximately 320 km northeast of the proposed facility and Wolf Island NWR, approximately 330 km south of the proposed facility. Based on discussions with the FLM, the more distant Class I areas are not included in the modeling analyses.[9]

The methods described in this modeling report are consistent with the Interagency Workgroup on Air Quality Modeling (IWAQM) *Phase 2 Summary Report*, the Federal Land Managers' Air Quality Related Values Workgroup (FLAG) *Phase I Report*, the U.S. EPA's *Guideline on Air Quality Models* (*Guideline*), and the U.S. EPA's *Regional Haze Regulations and Guidelines for Best Available Retrofit Technology* and discussions with the FLM and DHEC.[10,11,12,13]

3.1 CLASS I PSD INCREMENT

In general, all PSD permit applications are required to demonstrate through air quality modeling that the emissions increases from the proposed project will not cause or contribute to any violations of allowable increments within affected Class I areas, which are protected to a greater degree (i.e., the allowable increments are lower) than Class II areas. A significant contribution to Class I Increment consumption is defined as a modeled concentration in excess of the significant impact levels summarized in Table 3-1, which were originally developed as part of the 1996 NSR reform rulemaking and have subsequently been adopted as informal modeling significance levels for Class I analyses that are used to inform decision making as to whether a project is likely to cause or contribute to an adverse impact.

[9] March 22, 2006 meeting between Santee Cooper, Trinity Consultants, and the FLM.

[10] U.S. EPA, *IWAQM Phase 2 Summary Report and Recommendations for Modeling Long-Range Transport Impacts*, Research Triangle Park, North Carolina, EPA-454/R-95-006, 1995.

[11] U.S. Forest Service – Air Quality Program, National Park Service – Air Resources Division, U.S. Fish and Wildlife Service – Air Quality Branch, *Phase I Report of the Federal Land Managers' Air Quality Related Values Workgroup (FLAG)*, December 2000.

[12] 40 CFR Part 51, Appendix W (Revised, April 15, 2003).

[13] U.S. EPA, *Regional Haze Regulations and Guidelines for Best Available Retrofit Technology*, June 15, 2005.

TABLE 3-1. CLASS I PSD INCREMENTS AND MODELING SIGNIFICANCE LEVELS

Pollutant	Averaging Period	Class I Increment ($\mu g/m^3$)	Significance Level ($\mu g/m^3$)
PM_{10}	24-hour	8.0	0.32
	Annual	4.0	0.16
SO_2	3-hour	25.0	1.0
	24-hour	5.0	0.2
	Annual	2.0	0.1
NO_2	Annual	2.5	0.1

Because the Pee Dee facility will cause significant emission increases of NO_X, SO_2 and PM_{10}, the Class I air quality analysis assesses Class I PSD Increment for each of the species. If the significance level for any of these pollutants is exceeded, a regional inventory is developed and the impacts of the Pee Dee facility and the regional inventory are compared against the Class I increment. As discussed in Section 2.2.2, an inventory analysis was conducted for SO_2.

The PM_{10} increment consists of PMC, PMF, SOA, and EC as modeled in CALPUFF.

3.2 CLASS I AQRV ANALYSES

With the exception of visibility, the Clean Air Act and the PSD regulations do not define AQRV, do not provide procedures for defining AQRV, and do not provide criteria to determine critical pollutant loadings at which an adverse impact on AQRV would occur. The FLM AQRV Workgroup (FLAG) December 2000 Phase I report defines the following:[14]

> *Air Quality Related Value* - A resource, as identified by the FLM for one or more Federal areas, that may be adversely impacted by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource identified by the FLM for a particular area.
>
> *Adverse Impact on Air Quality Related Values* - A deleterious effect on any AQRV defined by the FLM, resulting from the emissions of a proposed sources or modification, that interferes with the management, protection, preservation, or enjoyment of the AQRV.

AQRV indicators typically identified by FLM include nitrogen deposition, sulfur deposition, and visibility degradation. The following sections discuss the AQRV addressed for this project.

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[14] U.S. Forest Service – Air Quality Program, National Park Service – Air Resources Division, U.S. Fish and Wildlife Service – Air Quality Branch, *Phase I Report of the Federal Land Managers' Air Quality Related Values Workgroup (FLAG)*, December 2000.

3.2.1 DEPOSITION

In the deposition analysis, the Pee Dee facility's contribution to the deposition of chemical species in the Class I area is evaluated against the deposition assessment threshold (DAT) values for sulfate and nitrate set by the FLM. The DAT represents "the additional amount of N or S deposition within a Class I area, below which estimated impacts from a proposed new or modified source are considered insignificant."[15] The threshold is not necessarily an adverse impact threshold and coastal ecosystems have evolved under naturally higher sulfur deposition rates.[16] FLM guidance for assessment of deposition impacts suggests that an appropriate sulfur and nitrogen DAT is 0.01 kg/ha/yr (each) for Class I areas in the Eastern United States.[17]

Gas-phase dry deposition was modeled for SO_2, NO_X, and HNO_3. Particulate-phase dry deposition was modeled for SO_4, NO_3, and PM_{10}. Wet deposition was modeled for SO_2, SO_4, HNO_3, and NO_3. The sum of wet and dry deposition fluxes for SO_2 and SO_4 represents the total sulfur deposition as shown in Equation 1.

$$\text{Sulfur Deposition (kg/ha/yr)} = \left(\text{flux}\,[SO_2] + \text{flux}\,[(NH_4)_2SO_4]\right)_{wet} + \left(\text{flux}[SO_2] + \text{flux}[(NH_4)_2SO_4]\right)_{dry}$$

Equation 1

The sum of wet and dry deposition fluxes for NO_X, NO_3, HNO_3, and ammonium ion (NH_4) from ammonium nitrate and sulfate represent the total nitrogen deposition, as shown in Equation 2.

$$\text{Nitrogen Deposition (kg/ha/yr)} = \left(\text{flux}[NH_4NO_3] + \text{flux}[HNO_3] + \text{flux}[(NH_4)_2SO_4]\right)_{wet} + \left(\text{flux}[NOx] + \text{flux}[NH_4NO_3] + \text{flux}[HNO_3] + \text{flux}[(NH_4)_2SO_4]\right)_{dry}$$

Equation 2

The contribution of the proposed project to the deposition of nitrogen and sulfur species in each Class I area are estimated and assessed against the DAT in Section 5 of this report.

3.2.2 VISIBILITY

Visibility can be affected by plume impairment (heterogeneous) or regional haze (homogeneous). Plume impairment results when there is a contrast or color difference between the plume and a viewed background (the sky or a terrain feature). Plume impairment is generally only of concern when the Class I area is near the proposed source

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[15] U.S. National Park Service - Air Resources Division and U.S. Fish and Wildlife Service - Air Quality Branch, *Guidance on Nitrogen and Sulfur Deposition Analysis Thresholds*, May 2002.

[16] *Ibid*.

[17] *Ibid*.

(i.e., less than 50 km). Since the distance between the Pee Dee facility and the Class I areas evaluated are greater than 50 km, only regional haze was considered in this analysis.

Regional haze occurs at distances where the plume has become evenly dispersed into the atmosphere such that there is no definable plume. The primary causes of regional haze are sulfates (SO_4) and nitrates (NO_3) (primarily as ammonium salts), which are formed from emissions of SO_2 and NO_X through chemical reactions in the atmosphere. These reactions take time, hence distance. Near a source little NO_X or SO_2 will have formed nitrate or sulfate, whereas far from a source nearly all SO_2 will have formed sulfate and most NO_X will have formed nitrate. Particulate emissions also contribute to regional haze but to a lesser extent since sulfates and nitrates are hygroscopic species that increasingly reduce visibility with increased relative humidity.

Regional haze is measured using the light extinction coefficient (b_{ext}). To determine a change in regional haze, the percentage change of the light extinction coefficient (Δb_{ext}) was evaluated as shown in the following Equation 3:

$$\Delta b_{ext} = \frac{b_{ext,project}}{b_{ext,background}}$$

Equation 3

The background extinction coefficient $b_{ext,\ background}$ is affected by various chemical species and the Rayleigh scattering phenomenon and can be calculated as shown in Equation 4:[18]

$$b_{ext,background}(km^{-1}) = b_{SO_4} + b_{NO_3} + b_{OC} + b_{soil} + b_{coarse} + b_{ap} + b_{ray}$$

Equation 4

where,

$b_{SO_4} = 0.003\,[(\mathrm{NH}_4)_2\mathrm{SO}_4]\,f(RH)$
$b_{NO_3} = 0.003\,[\mathrm{NH}_4\mathrm{NO}_3]\,f(RH)$
$b_{OC} = 0.004\,[\mathrm{OC}]$
$b_{Soil} = 0.001\,[\mathrm{Soil}]$
$b_{Coarse} = 0.0006\,[\text{Coarse Mass}]$
$b_{ap} = 0.01[\text{Elemental Carbon}]$
$\mathrm{b}_{\mathrm{Ray}}$ = Rayleigh Scattering
f(RH) = relative humidity adjustment factor
[ ] = Concentration in $\mu g/m^3$

Values for the parameters listed above specific to the natural background conditions at the Class I areas considered in this analysis are provided on an annual average basis in the

[18] U.S. Forest Service – Air Quality Program, National Park Service – Air Resources Division, U.S. Fish and Wildlife Service – Air Quality Branch, *Phase I Report of the Federal Land Managers' Air Quality Related Values Workgroup (FLAG)*, December 2000.

U.S. EPA's *Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule*.[19] The values are shown in Table 3-2.

TABLE 3-2. ANNUAL AVERAGE BACKGROUND VALUES

Species	Average Concentration ($\mu g/m^3$)
Ammonium Sulfate	0.23
Ammonium Nitrate	0.10
Organic Carbon Mass	1.40
Elemental Carbon	0.02
Soil	0.50
Coarse Mass	3.0

The extinction coefficient due to emissions increases from the proposed project $b_{ext,project}$ are also be calculated. Pollutants that have the potential to affect visibility (SO_2, NO_X, and particulate species) will be emitted from the proposed project. The extinction due to the project is calculated as shown in Equation 5.

$$b_{ext,project}(km^{-1}) = b_{SO_4} + b_{NO_3} + b_{PMF} + b_{PMC} + b_{SOA} + b_{EC}$$ *Equation 5*

where,

$b_{SO_4} = 0.003\left[(\mathrm{NH}_4)_2\mathrm{SO}_4\right] f(RH)$
$b_{NO_3} = 0.003\left[\mathrm{NH}_4\mathrm{NO}_3\right] f(RH)$
$b_{PMC} = 0.0006[PMC]$
$b_{PMF} = 0.001[PMF]$
$b_{soa} = 0.004[SOA]$
$b_{EC} = 0.01[EC]$
$f(RH) =$ relative humidity adjustment factor
$[\quad] =$ Concentration in $\mu g/m^3$

Particulate species and precursors that affect visibility are emitted in various phases and include coarse particulate matter (PMC), fine particulate matter (PMF), secondary organic aerosols (SOA), and elemental carbon (EC). In this analysis, an upper bound was placed on the relative humidity function such that no *f*(RH) factors are applied greater than *f*(95%) to the extinction caused by hygroscopic sulfate and nitrate species.

The Δb_{ext} value attributable to a single facility that is generally acceptable to the FLM is 5% on a 24-hour average basis. Values above 10% are interpreted to indicate that a cumulative visibility analysis should be performed. However, the "FLM is required to

[19] U.S. EPA, *Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule*, Table 2-1, Attachment A, September 2003, EPA-454/B-03-005.

make a determination on a "…case-by-case basis taking into account the geographic extent, intensity, duration, frequency and time of visibility impairments."[20]

There are a number of methods for the FLM to review the intensity, duration, frequency and time of visibility impairments. These alternative modeling options are discussed in detail in the following sections. Per discussions with the FLM, results from each of the different scenarios are presented in this report.[21]

The peak 24-hour average visibility impairment as predicted by the air quality model is typically used to attribute visibility affects to a single source. However, the recently promulgated Regional Haze Regulations and *Guidelines for Best Available Retrofit Technology* establish a different metric for assessing whether a single facility causes or contributes to visibility impairment. This guidance establishes a 0.5 deciview (dv) (roughly equivalent to 5% extinction change) threshold for contribution and 1.0 dv (approximately 10% extinction change) threshold for causation of visibility impairment. These thresholds are essentially equivalent to the FLAG guidance, except that they are to be applied to the 98th percentile model result for an analysis that considers multiple years of meteorological data. In other words, application of the 98th percentile standard formalizes the intensity, duration, and frequency aspects of modeled visibility impairment events by standardizing discretion left to the FLM on a case-by-case basis to exclude visibility impairment events that could be due to meteorological conditions or other naturally occurring phenomena that are not attributable to the emissions source. Visibility modeling results are presented at both peak and 98th percentile levels to demonstrate two interpretations of the model results.

As further described in Section 4 of this Class I modeling protocol, this analysis utilizes the Visibility Improvement State and Tribal Association of the Southeast (VISTAS) version of the CALPOST processor to assess impacts from the proposed project on regional haze. The IWAQM recommended "Method 2," which uses hourly relative humidity adjustment applied to background and modeled sulfate and nitrate with the relative humidity factor capped at 95%, was used to compute visibility impairment in terms of Δb_{ext} from modeled pollutant concentrations. This postprocessing option uses observed relative humidity values and pollutant concentrations at each receptor to compute the percent change in visibility due to the facility's emissions compared against the natural background visibility under the prevailing atmospheric conditions. Method 2 is considered the default approach under FLAG.

An alternative approach, "Method 6," computes Δb_{ext} using a *monthly average* relative humidity adjustment particular to each Class I area applied to background and modeled sulfate and nitrate. Because a monthly average is used, no cap on f(RH) is necessary since the function is not used in Method 6 and the results tend to be smoothed out since peak short-term humidity events are not considered. Method 6 is not typically considered a

[20] (40 CFR §51.301 (a)).

[21] March 22, 2006 meeting between Santee Cooper, Trinity Consultants, and the FLM.

default approach for PSD AQRV analyses, but is used to assess visibility impairment under the U.S. EPA's *Guidelines for Best Available Retrofit Technology*, in particular in the VISTAS regional planning organization that encompasses the Southeastern U.S.[22] The monthly f(RH) values are shown in Table 3-3.

TABLE 3-3. MONTHLY AVERAGE *f*(RH) FOR CAPE ROMAIN*

January	February	March	April	May	June	July	August	September	October	November	December
3.3	3.0	2.9	2.8	3.2	3.7	3.6	4.1	4.0	3.7	3.4	3.2

*As tabulated in Table A-3 of U.S. EPA's *Guidance for Estimating Natural Visibility Conditions under the Regional Haze Rule* (2003).

Visibility modeling results for the Pee Dee facility are presented using Method 2 and Method 6 to inform the FLM and South Carolina DHEC of each interpretation of model results and to illustrate the frequency of visibility impairment events that are caused by naturally occurring weather conditions.

Since the Class I areas of interest are located in coastal areas, additional model refinements for the visibility calculations may be appropriate. The default value of the Rayleigh scattering term is 10 Mm^{-1}, however that parameter is sensitive to elevation. IMPROVE has determined a value for Cape Romain of 12 Mm^{-1}.[23]

In addition to the elevation correction, the proximity of the Class I areas to the ocean increases the amount of sea-salt present in the background environment. Those salts will have an impact on the naturally occurring visibility and corrections are applied for that process. Specifically, average sea salt concentrations were calculated for each month based on sodium data collected at the Cape Romain IMPROVE monitoring site. Sodium concentrations were converted to NaCl based on molecular weight ratio. The effects of hygroscopic interactions of sea salt were accounted for by multiplying the monthly average f(RH) factor listed in Table 3-3. The new concentration was added to the background soil concentration. Calculations of the sea salt background levels are included in Appendix A.

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[22] VISTAS, "Protocol for the Application of the CALPUFF Model for Analyses of Best Available Retrofit Technology (BART)," December 22, 2005.

[23] IMPROVE Technical Subcommittee, "Revised IMPROVE Algorithm for Estimating Light Extinction from Particle Speciation Data". January 2006.

4. CLASS I AREA MODELING METHODS

The preferred model for analyzing long-range pollutant transport (i.e., distances greater than 50 km) is the CALPUFF modeling system. The VISTAS version (Version 5.754 of CALPUFF, 5.724 of CALMET, and 5.6393 of CALPOST) of the CALPUFF model is used to determine the possible impacts of the proposed Pee Dee facility on Class I PSD Increment and AQRV at Cape Romain. This version of the CALPUFF modeling system is currently being used to address the Regional Haze Rule (RHR) for the VISTAS region. As the FLM are currently reviewing a number of VISTAS regional haze analyses, this modeling demonstration utilizes the same modeling system and much of the same data as used in the VISTAS regional haze analyses.

CALPUFF is a multi-layer, multi-species, non-steady-state Lagrangian puff model, which can simulate the effects of time- and space-varying meteorological conditions on pollutant transport, transformation, and removal. For this refined analysis, meteorological fields generated by CALMET are used as inputs to the CALPUFF model to ensure that the effects of terrain and spatially varying surface characteristics on meteorology are considered.

In addition to meteorological data, the CALPUFF model uses several other input files to specify source and receptor parameters. The selection and control of CALPUFF options are determined by user-specific inputs contained in the control file. This file contains all of the necessary information to define a model run (e.g., starting date, run length, grid specifications, technical options, output options). The air quality modeling was performed using CALPUFF default options unless otherwise noted, as specified in the federal *Guideline* and IWAQM documents. The following sections describe the modeling domain, meteorological data, background concentrations, and model implementation to be used for the analysis of the new Pee Dee Facility.

4.1 MODELING DOMAINS

The meteorological CALMET domain and computational CALPUFF domains are illustrated in Figure B-2. For the purposes of this analysis, the CALMET and CALPUFF domains are identical for each analysis and are singularly referred to herein as the “domain.” The size of the domain is 250 km by 352 km, and was selected to encompass both the Pee Dee Facility and the Cape Romain area, to extend at least 50 km beyond Cape Romain and the facility in all directions, and to incorporate all regional inventory sources. The size of the domain allows for the possible recirculation of puffs beyond the facility and areas being evaluated.

The horizontal domain is comprised of grid cells, each containing a central grid point at which meteorological and computational parameters are calculated at each time step. For this analysis, grid spacing intervals of 2 km were selected to resolve terrain features within the domain, which is generally flat. Given this interval, the domain consists of 125 by 176 grid cells. Table 4-1 summarizes the vertical grid structure selected for both analyses. The cell face height of each cell indicates its vertical extent. The vertical domain is also composed of terrain-following grid cells, the number and size of which are chosen so as to constrain the boundary layer in which dispersion and chemical transformations take place. The highest cell face was selected to be 4,000 meters to constrain the default maximum mixing height of 3,000 meters. Ambient impacts are predicted at receptors specified by the FLM to represent Cape Romain.[24]

TABLE 4-1. VERTICAL GRID STRUCTURE

Vertical Grid Cell	Cell Face Height (meters)
1	20
2	40
3	80
4	160
5	320
6	640
7	1,200
8	2,000
9	3,000
10	4,000

Note that the coordinates used in this modeling simulation were Lambert Conformal Coordinates based on the design of the VISTAS RHR modeling.[25] These coordinates have an origin of 40°N and 97°W with standard parallels of 33°N and 45°N.

4.2 CALMET METEOROLOGICAL PROCESSING

CALMET is the meteorological preprocessor that compiles meteorological data from raw observations of surface and upper air conditions, precipitation measurements, mesoscale model output, and geophysical parameters into a single hourly, gridded data set for input to CALPUFF. The federal *Guideline* for CALPUFF processing provides the following recommendations for the meteorological data period analyzed at Section 9.3.1.2:

> *For LRT situations (subsection 7.2.3) … if only NWS or comparable standard meteorological observations are employed, five years of meteorological data (within and near the modeling domain) should be used. Consecutive years from the most recent, readily available 5-year period are preferred. Less than five, but at least three, years of meteorological data (need not be consecutive) may be used if mesoscale meteorological fields are available, as discussed in paragraph 9.3(c). These mesoscale meteorological fields should be used in conjunction with available standard NWS or comparable meteorological observations within and near the modeling domain.*

The FLM frequently prefer the application of mesoscale meteorological (MM) data due to its high resolution, three-dimensional representation of meteorological conditions. Recently, three years of

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[24] http://www2.nature.nps.gov/air/maps/Receptors/index.htm

[25] VISTAS, *Protocol for the Application of the CALPUFF Model for Analyses of Best Available Retrofit Technology (BART)*, December 22, 2005, revised March 9, 2006.

MM data have been developed as part of the RHR modeling. The data are quality assured, and generally accepted for use in regulatory modeling applications: 2001 MM5 data (12 km resolution), 2002 MM5 data (12 km resolution), and 2003 MM5 data (36 km resolution).

4.2.1 GEOPHYSICAL DATA

CALMET requires geophysical data about the domain to characterize the terrain and land use parameters that potentially affect dispersion. Terrain features affect flows and create turbulence in the atmosphere and are potentially subjected to higher concentrations of elevated puffs. Different land uses exhibit variable characteristics such as surface roughness, albedo, Bowen ratio, and leaf-area index that also affect turbulence and dispersion. Terrain and land use and cover data were obtained from the USGS in 1-degree (1:250,000 scale or approximately 90-meter resolution) digital formats. Data preprocessors were used to format and assimilate these data into a single geophysical data file for processing by CALMET. Figures B-3 and B-4 depict the terrain and land use and cover in the modeling domains as represented in CALMET, respectively.

4.2.2 SURFACE METEOROLOGICAL DATA

The use of multiple stations for meteorological observations in CALMET/CALPUFF provides a substantial enhancement over the steady-state treatment of observations from a single meteorological station. Parameters affecting turbulent dispersion that are observed hourly at surface stations include wind speed and direction, temperature, cloud cover and ceiling, relative humidity, and precipitation type. Surface data stations used were the same as those developed as part of the RHR VISTAS modeling developed by the VISTAS contractor. Surface stations are shown in Figure B-5. Note that the use of the VISTAS data set includes a large number of stations based on the VISTAS domain. As the impact of each station is weighted by distance and those stations beyond a certain distance are not included, these more distant stations will not impact the analysis.

4.2.3 UPPER AIR DATA

Observations of meteorological conditions in the upper atmosphere provide a profile of turbulence from the surface through the depth of the boundary layer in which dispersion occurs. Upper air data are collected by balloons launched simultaneously across the observation network at 0000 Greenwich Mean Time (GMT) (7 o'clock PM in South Carolina) and 1200 GMT (7 o'clock AM in South Carolina). Sensors observe pressure, wind speed and direction, and temperature (among other parameters) as the balloon rises through the atmosphere. The upper air observation network is less dense than surface observation points since upper air conditions vary less and are generally not as affected by local effects (e.g., terrain or water bodies). As with the surface data, upper air data were the same is incorporated in the VISTAS RHR analyses completed by the VISTAS contractor. Figure B-6 shows the locations of the upper air stations.

4.2.4 PRECIPITATION DATA

Trinity considered the effects of chemical transformations and deposition processes on ambient pollutant concentrations in this analysis. Therefore, it was necessary to include observations of precipitation in the CALMET analysis. Precipitation data were collected from selected surface meteorological data stations included in the analysis, plus Cooperative Observation Network (COOP) stations nearer to or within the domain. Precipitation data were the same is incorporated in the VISTAS RHR analyses completed by the VISTAS contractor. Figure B-7 shows the locations of the precipitation stations.

4.2.5 OVERWATER DATA

Because parts of the modeling domain encompass the open waters of the Atlantic Ocean and Cape Romain located along the Atlantic Coast, Trinity included meteorological data from buoys to utilize overwater meteorological processing algorithms in CALMET.

The critical differences in behavior of the inland and marine boundary layers, and atmospheric dispersion phenomena occurring within these distinct regimes, is well documented and recognized to play a vital role in the dispersion of pollutants originating in, or destined to affect, coastal areas. Key phenomena occurring in coastal environments that affect pollutant dispersion include land/sea-breezes that cause recirculation of pollutant mass, temperature moderation that results in sharp gradients and mixing height discontinuities at the land-sea interface, and thermal internal boundary layers that could cause severe fumigation under certain conditions. The CALMET processor is equipped to assimilate overwater data obtained from coastal, near-shore, and offshore observation platforms. CALMET uses a profile method to simulate boundary layer effects by computing the friction velocity, Monin-Obukhov length, surface roughness, and mixing height over the water surface. The details of the formulation of marine dispersion algorithms are provided in the documentation accompanying the CALPUFF modeling system.

To perform its simulation of the coastal environment, CALMET requires hourly observations of air temperature, air-sea temperature difference, wind speed and direction, relative humidity, overwater mixing height, and the overwater temperature gradients above and below the overwater mixing height. For practical applications of overwater boundary layer computations, these data can be obtained in part from the National Data Buoy Center (NBDC). The NBDC maintains an inventory of standard meteorological data observed by ships, buoys, and C-MAN stations in coastal, near-shore, and offshore locations.

NDBC's data sets provide direct wind and temperature measurements, and relative humidity can be inferred from pressure and dewpoint observations. The mixing height and temperature gradients and default values must be applied by CALMET when simulating the coastal atmosphere. Buoy data were the same is incorporated in the VISTAS RHR analyses completed by the VISTAS contractor. Figure B-8 shows the locations of the over-water stations.

4.2.6 MESOSCALE MODEL OUTPUT

Output from mesoscale meteorological (MM) forecast models is an ideal input for air quality models because parameters that characterize the state of turbulence in the atmosphere are diagnosed on a high resolution, three-dimensional grid. For this analysis, output from mesoscale models were used to provide the "initial guess" wind field for CALMET processing, using 2001 MM5 data (12 km resolution), 2002 MM5 data (12 km resolution), and 2003 MM5 data (36 km resolution). Note that the MM data developed for VISTAS do not include information for the first day of 2004 which is required to process the last day of 2003. Therefore, only 364 days were modeled for 2003. Figure B-9 shows the extraction domains of meteorological data to be used in the primary analysis.

Using this approach, the wind field at grid points within the horizontal and vertical CALMET domain was initially interpolated from the MM grid. Observations of winds from surface and upper air stations (which may in fact be quite distant from a particular CALMET grid point) were subsequently interpolated using an inverse-distance scheme to define the meteorological fields within the domain.

4.2.7 CALMET PROCESSING CONTROL

CALMET assimilates all of the surface, upper air, precipitation, geophysical, and mesoscale data described in the previous sections into a single hourly, gridded data file for use by CALPUFF. This file contains winds, temperature, micrometeorological variables, and turbulence parameters necessary for CALPUFF to make dispersion, chemical transformation, and deposition computations at each grid cell and time step. A control file contains all the inputs to run the CALMET processor. For this analysis, default values will be used with the following exceptions, for which there is no default parameter or case-by-case analysis is warranted.

As previously discussed, MM data are used as the initial guess wind field and subsequently adjusted using NWS observations of surface and upper air winds. Default options for kinematic effects, divergence minimization, Froude number adjustment, and computation of slope flows were enabled to allow for local adjustment of wind fields introduced by MM data.

The choice of the radius of influence of the surface observations (RMAX1), upper air observations (RMAX2), and offshore buoy observations (RMAX3) is left to the discretion of the user since there are no accepted default values provided, for example, by the Interagency Workgroup on Air Quality Modeling (IWAQM) *Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts*.[26] Appendix A of the IWAQM report provides recommended default CALMET settings, but there is no default for RMAX1, RMAX2, and RMAX3. Santee Cooper is not aware of other guidance that would define what is normally used for these parameters for analyses conducted in the Southeastern U.S. and in particular the regions of South Carolina, North Carolina, and Georgia that encompass these analyses. The model developer has posted general technical guidance addressing typical considerations for these model settings.[27]

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[26] U.S. EPA Report EPA-454/R-98-019, December 1998.

[27] http://src.com/calpuff/FAQ-answers.htm#1.1.8

The settings of RMAX1, RMAX2, and RMAX3 cause the CALMET model to use observed wind measurements in the Step 2 wind field computation wherein the observations are blended with the first-guess windfield generated from MM5 wind data to represent local effects (e.g., terrain) that may not be resolved in the lower resolution (e.g., 12 km [2001 and 2003] or 36 km [2003]) MM data. Note that in conjunction with the RMAX settings, LVARY will be set to false so that the weight of observations would be limited within these radii and CALMET would not artificially use observed values for portions of the grid outside of the observation radius.

The selection of RMAX1 = 40 km, RMAX2 = 40 km, and RMAX3 = 100 km is justified by the relative scarcity of uniform surface, upper air, and buoy observations within the large modeling domain. Therefore, the use of supplementary observation stations beyond the modeling domain and an adequately large radius of influence were necessary to cover the majority of the domain.

Trinity also notes that additional parameters, R1 and R2, control the relative weighting of observed and first-guess MM5 data. R1 (surface) and R2 (upper air) represent the distance at which the observation and MM data are equally weighted, and are the more relevant parameters for assessing the relative weight of surface and upper air observations compared to the MM5 wind field. The values of R1 and R2 will each be set to the relatively small value of 5 km to balance the resolution of MM5 data (12 km or 36 km) and the lower density of NWS observations.

4.3 CALPUFF MODEL PROCESSING

Using the data provided by CALMET, CALPUFF simulates the dispersion, deposition, and chemical transformation of discrete puffs of mass from emission sources. Each puff contains emissions of NO_X, SO_2, and PM_{10} and is advected throughout the domain while deposition and chemical transformation processes take place. CALPUFF is a Lagrangian puff model, the principle advantages of which are that pollutant plumes can evolve dynamically and chemically over time and can respond to complex winds caused by terrain effects, stagnation, or recirculation.

Emissions data for each modeled emission source were entered into CALPUFF as previously described in Table 2-1 of this report. Due to the distance from the source to the Class I areas, building downwash was not enabled.

This analysis was performed with the deposition and chemical transformation algorithms enabled. A full resistance model is provided in CALPUFF for the computation of dry deposition rates of gases and particulate matter as a function of geophysical parameters, meteorological conditions, and pollutant species. An empirical scavenging coefficient approach using default options was enabled in CALPUFF to compute the depletion and wet deposition fluxes due to precipitation scavenging. The CALPUFF model is capable of simulating linear chemical transformation effects by using pseudo-first-order chemical reaction mechanisms for the conversions of SO_2 to SO_4 and NO_X, which consists of nitrogen oxide (NO) and nitrogen dioxide (NO_2), to nitrate (NO_3) and nitric acid (HNO_3). In this study, chemical transformations involving five species (SO_2, SO_4, NO_X, HNO_3, and NO_3) were modeled using the MESOPUFF II chemical transformation scheme, per IWAQM guidance. There are two user-selected input parameters that affect the MESOPUFF II chemical transformation, ammonia concentrations and ozone concentrations. The selection of each parameter is discussed separately.

4.3.1 OZONE

Ambient ozone concentrations can be input to the model as a background level or using hourly, spatially varying observations. For this analysis, monitored hourly ozone data from each data year from ozone monitors within and near the domain were included. Operational monitors on the CASTNET and AIRS reporting networks were reviewed as part of the VISTAS RHR modeling and a subset of these monitors was selected for this analysis. A plot of stations is included in Figure B-10.

4.3.2 AMMONIA

IWAQM Phase 2 recommends the use of spatially constant background ammonia concentrations to participate in the MESOPUFF-II chemical transformation mechanism.[28] In the absence of an extensive monitoring network for ammonia and due to the limitation of CALPUFF to simulate only a single, domain-average background ammonia level for each month of analysis, a single value will be used. The land use analysis presented in Figure B-4 illustrates that the majority of the modeling domain is forested, water, or agricultural area. The IWAQM guidance recommends the ammonia value be set between 0.5 ppb for forested areas and 10 ppb for grasslands. The inland portions of the modeling domain are predominantly forested and the remainder of the domain over the Atlantic Ocean, therefore the ammonia background level was set at 0.5 ppb for this analysis.

In addition, based on conversations with the FLM, nitrate data at Cape Romain was reviewed in support of the NH_3 background level. Monthly average ammonium nitrate data for 2001-2003 is shown in Figure 4-1.[29] As part of the NH_3 review, the FLM has also requested an impact analysis using 1 ppb NH_3. The results of this scenario are included in Section 5.

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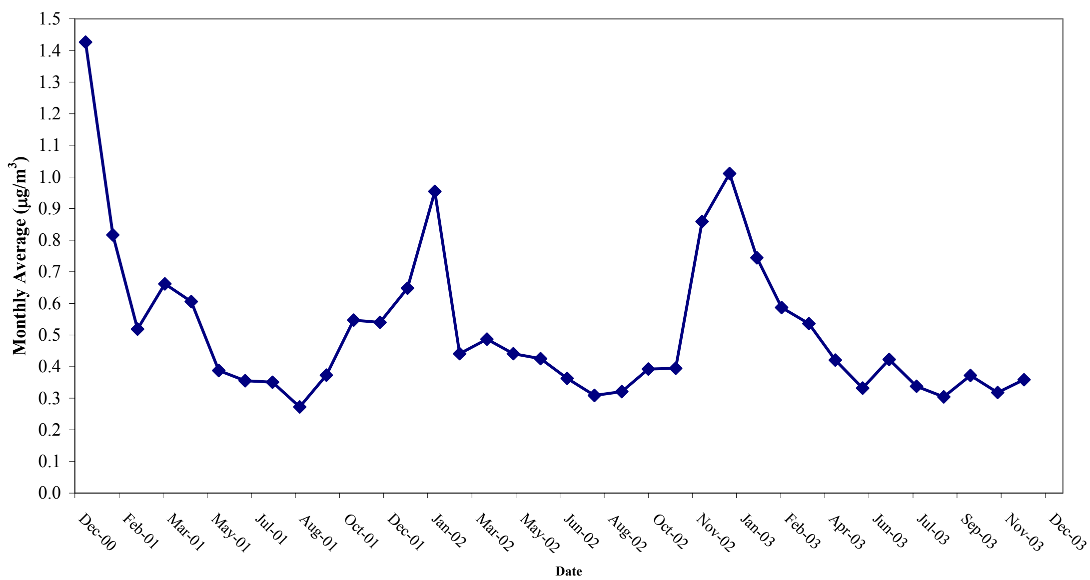
[28] U.S. EPA, *IWAQM Phase 2 Summary Report and Recommendations for Modeling Long-Range Transport Impacts*, Research Triangle Park, North Carolina, EPA-454/R-95-006, 1995 at 14.

[29] Data from IMPROVE Database: http://vista.cira.colostate.edu/views/Web/Data/DataWizard.aspx.

FIGURE 4-1. AMMONIUM NITRATE LEVELS AT CAPE ROMAIN



4.3.3 CALPUFF PROCESSING CONTROL

CALPUFF modeling was conducted generally using the recommended regulatory default options specified in Appendix B of the IWAQM guidance. The integrated puff representation will be used and puff splitting will be conservatively disabled.

4.4 CALPOST POSTPROCESSING ANALYSIS

The CALPOST postprocessor was used to compute the ambient concentrations of SO_2, PM_{10}, and NO_2 at Class I areas for assessment against the PSD Class I Increment modeling significance level, the total deposition of sulfur and nitrogen within each Class I area for assessment against the DAT, and the 24-hour average visibility impairment. Section 3 generally described the technical approach for computing these values from the modeled concentrations of pollutant emissions.

Specifically within CALPOST for deposition calculations, POSTUTIL was used to combine the appropriate wet and dry fluxes of nitrogen- and sulfur-bearing species deposited as particles and gases. POSTUTIL was also used to combine the speciated PM (PMC, PMF, SOA, EC) to evaluate PM_{10} increment. CALSUM was used to combine increment consumers and expanders for regional inventory Class I increment modeling.

Visibility change is computed using each of Method 2 and Method 6 and results are reported for the peak and 98th percentile 24-hour average visibility change for each of the three years of meteorological data modeled. Results are also presented incorporating background sea salt and the Cape Romain-specific Rayleigh scattering value. The ammonia limiting method (ALM) is applied to adjust predicted concentrations and the final endpoint. Model results are presented using the same monthly average ammonia level (0.5 or 1 ppb) as used in the model.

Results of the dispersion modeling analyses presented in this section demonstrate that the Pee Dee facility will neither cause nor contribute to an adverse impact on air quality or air quality related values.

5.1 CLASS I INCREMENT

Impacts were predicted at the receptors at Cape Romain and compared to the Class I modeling significance levels. As shown in Table 5-1, NO_X and PM_{10} do not exceed the significance levels and no further modeling is conducted to demonstrate compliance. The high first-high value is shown for all pollutants and averaging periods in Table 5-1.

TABLE 5-1. COMPARISON TO CLASS I SIGNIFICANCE LEVELS

Pollutant	Averaging Period	Year	Impact ($\mu g/m^3$)	Significance Level ($\mu g/m^3$)	Exceeds?
NO_X	Annual	2001	6.26E-03	0.1	No
		2002	6.30E-03	0.1	No
		2003	8.27E-03	0.1	No
PM_{10}	24-hour	2001	0.03	0.32	No
		2002	0.05	0.32	No
		2003	0.06	0.32	No
	Annual	2001	2.34E-03	0.16	No
		2002	2.41E-03	0.16	No
		2003	2.38E-03	0.16	No
SO_2	3-hour	2001	1.46	1.0	Yes
		2002	1.62	1.0	Yes
		2003	1.94	1.0	Yes
	24-hour	2001	0.34	0.2	Yes
		2002	0.55	0.2	Yes
		2003	0.73	0.2	Yes
	Annual	2001	0.02	0.1	No
		2002	0.02	0.1	No
		2003	0.02	0.1	No

SO_2 impacts exceed the Significance Levels and a regional inventory, as described in Section 2.2.2, was modeled along with the proposed facility. Table 5-2 demonstrates that the Pee Dee facility will not cause or contribute to a violation of the Class I Increment. The annual impacts are calculated to be zero in the model. On an annual average the increment expanders (negative sources) are greater than the increment consumers (positive sources) in the inventory. As CALPUFF will not provide a negative result, the predicted annual concentration is listed as zero. The high second value is shown for 3-hour and 24-hour averaging periods.

TABLE 5-2. SO_2 REGIONAL INVENTORY INCREMENT IMPACTS

Year	3-Hour ($\mu g/m^3$)	3-Hour Standard ($\mu g/m^3$)	24-Hour ($\mu g/m^3$)	24-hour Standard ($\mu g/m^3$)	Annual ($\mu g/m^3$)	Annual Standard ($\mu g/m^3$)
2001	20.1	25	4.4	5	-	1
2002	16.8	25	4.3	5	-	1
2003	16.1	25	4.5	5	-	1

5.2 DEPOSITION

As described in Section 3.2.1, the deposition of nitrogen and sulfur species was calculated at Cape Romain. The maximum deposition is shown in Table 5-3. The nitrogen deposition is below the DAT value of 0.01 kg/ha/yr and the sulfur deposition slightly exceeds this value. As discussed previously, the DAT values are not necessarily an adverse impact threshold and coastal ecosystems have evolved under naturally higher sulfur deposition rates. Therefore, an adverse impact on Cape Romain is not expected from sulfur or nitrogen deposition.

TABLE 5-3. NITROGEN AND SULFUR DEPOSITION

Year	Nitrogen (kg/ha/yr)	Sulfur (kg/ha/yr)
2001	0.003	0.020
2002	0.004	0.020
2003	0.003	0.016

5.3 VISIBILITY

As discussed previously, there are several options for reviewing the visibility impacts at a Class I area. As discussed in the modeling protocol and during meetings with the FLM, a number of scenarios are presented for review to assess the intensity, duration, frequency and time of visibility impairments. Results are summarized in Table 5-4 for the following scenarios using ammonia at 0.5 ppb:

- Method 2
- Method 2 with ALM
- Method 6
- Method 6 with ALM
- Method 6 with ALM and Rayleigh Scattering set to 12 Mm^{-1} (RS=12)
- Method 6 with ALM, RS=12, and sea salt correction (SS)

TABLE 5-4. VISIBILITY IMPACTS

CALPOST Method	Year	Max Impact	98th Percentile	No. Days >10%	No. Days >5%
Method 2	2001	7.8%	3.5%	0	3
	2002	6.8%	4.2%	0	6
	2003	22.0%	3.9%	1	4
Method 2 - ALM	2001	8.1%	3.5%	0	3
	2002	6.6%	3.8%	0	5
	2003	21.7%	4.0%	1	4
Method 6	2001	7.0%	4.3%	0	4
	2002	9.6%	4.9%	0	7
	2003	14.7%	4.3%	1	6
Method 6 - ALM	2001	7.1%	4.4%	0	4
	2002	9.4%	4.3%	0	5
	2003	14.42	4.28	1	6
Method 6 - ALM, RS=12	2001	6.5%	4.0%	0	3
	2002	8.6%	3.9%	0	4
	2003	13.2%	3.9%	1	4
Method 6 - ALM RS=12, SS	2001	5.8%	3.5%	0	2
	2002	6.9%	3.7%	0	3
	2003	12.4%	3.4%	1	4

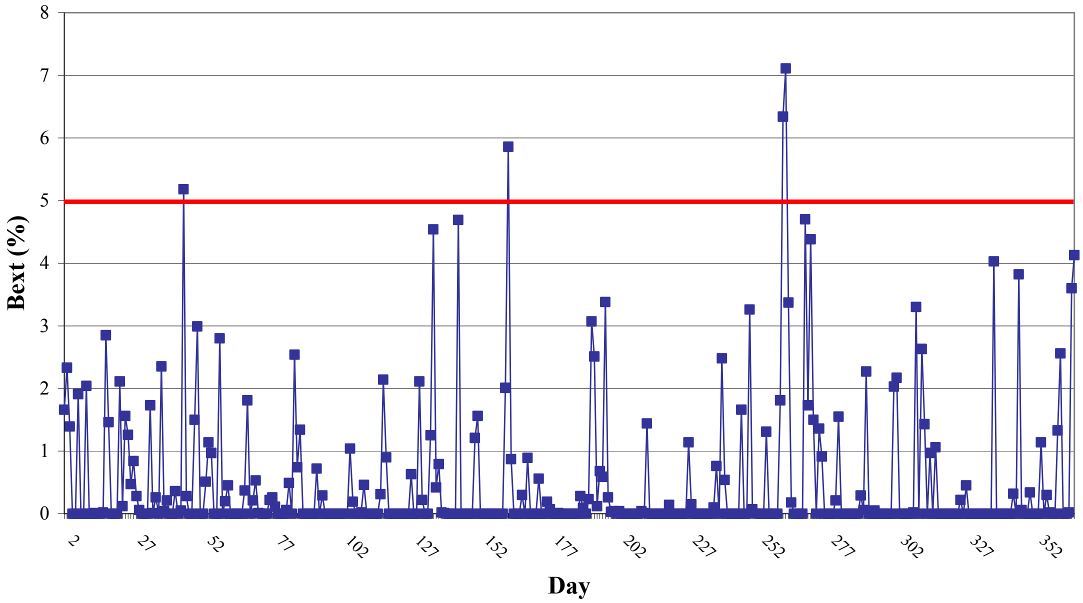
In addition, results for 1 ppb ammonia are presented for Method 2 and Method 2 with ALM in Table 5-5.

TABLE 5-5. VISIBILITY IMPACTS WITH AMMONIA – 1 PPB

CALPOST Method	Year	Max Impact	98th Percentile	No. Days >10%	No. Days >5%
Method 2	2001	8.3%	3.8%	0	5
	2002	6.8%	4.3%	0	6
	2003	22.2%	4.1%	1	5
Method 2 - ALM	2001	8.9%	3.7%	0	5
	2002	6.6%	5.2%	0	6
	2003	22.4%	4.2%	1	5

As shown in Table 5-4, the impacts from Santee Cooper's Pee Dee facility do show exceedances of the 5% threshold on the highest impact day. However, as evidenced by the 98th percentile values (8th highest day) and the daily impact plots for selected scenarios in Figures 5-1 to 5-3, these high impact days occur very infrequently. Therefore, taking into account the intensity, duration, frequency and time of visibility impairments,[30] the impacts from the facility do not create an adverse impact on visibility.

FIGURE 5-1. 2001 DAILY VISIBILITY CHANGE (METHOD 6 WITH ALM)



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[30] (40 CFR §51.301 (a)).

FIGURE 5-2. 2002 DAILY VISIBILITY CHANGE (METHOD 6 WITH ALM)

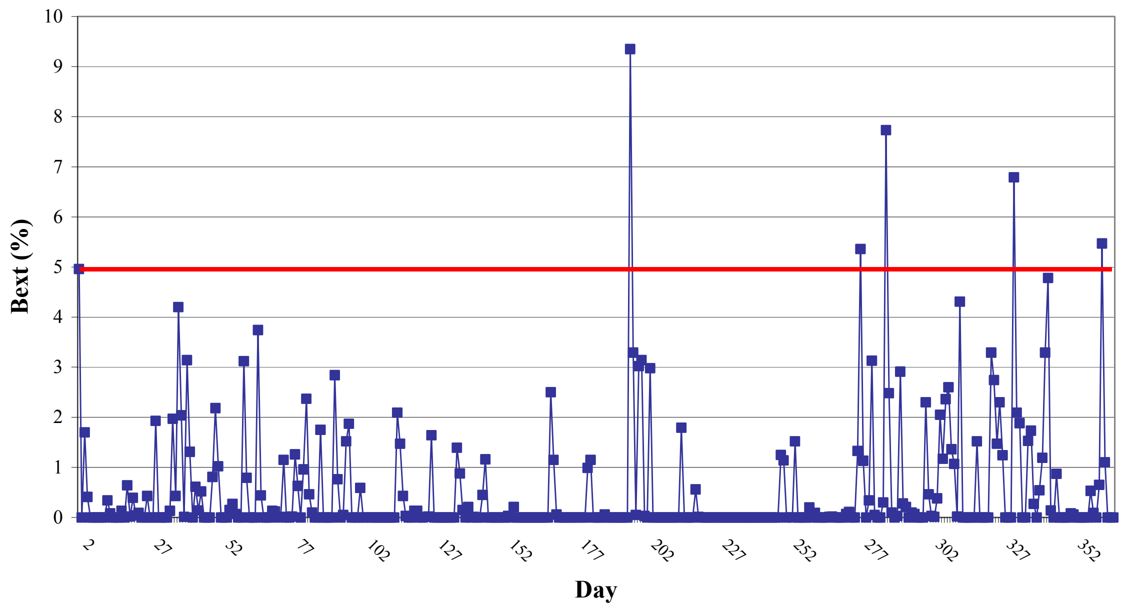
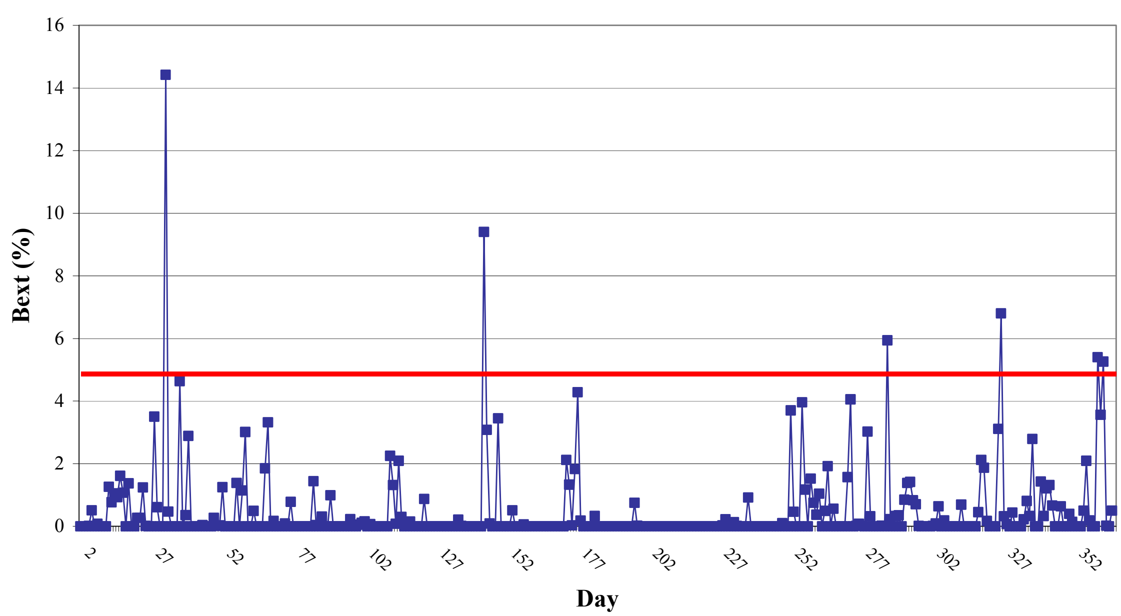


FIGURE 5-3. 2003 DAILY VISIBILITY CHANGE (METHOD 6 WITH ALM)



APPENDIX A

SUPPORTING TALBES

Table A-1. Regional Inventory Sources

County	ID	Company Name	Stack Details	SO_2 Emissions (lb/hr)	UTM East (m)	UTM North (m)	Height (ft)	Temp °F	Modeled Velocity (ft/s)	Diameter (ft)
Beaufort	BEA01	US Marines-MCRD Parris Island	CPP4 Boiler 4	-3.66E+00	530,943	3,579,198	65.00	424.00	39.37	3.15
Beaufort	BEA02	US Marines-MCRD Parris Island	WPP5 Boiler 5	-3.79E+01	527,863	3,576,948	35.10	424.00	38.71	1.48
Beaufort	BEA03	US Marines-MCRD Parris Island	WPP6 Boiler 6	5.93E+01	527,866	3,576,951	35.10	424.00	25.59	2.30
Beaufort	BEA04	US Marines-MCRD Parris Island	WPP7 Boiler 7	5.93E+01	527,871	3,576,956	35.10	433.00	25.59	2.30
Beaufort	BEA05	US Marines Corps Air Station	FC1/2 - boilers 1&2	8.92E-02	526,364	3,591,621	73.00	269.00	0.03	4.00
Beaufort	BEA06	US Marines Corps Air Station	Microturbines	8.25E-01	526,355	3,591,605	6.90	170.00	51.18	0.82
Beaufort	BEA07	US Marines Corps Air Station	FC3 - boiler 3	1.71E+00	528,259	3,592,289	25.00	300.00	0.03	1.05
Beaufort	BEA08	US Marines Corps Air Station	TS5 - T10 Test Cell Stack 1	4.79E+00	525,165	3,593,059	40.00	203.00	15.10	13.78
Beaufort	BEA09	US Marines Corps Air Station	TS5 - T10 Test Cell Stack 2	4.79E+00	525,165	3,593,059	40.00	687.00	98.10	13.78
Beaufort	BEA10	Santee Cooper - Hilton Head	Unit 3	3.54E+02	528,328	3,563,489	32.00	990.00	120.00	15.00
Beaufort	BEA11	Ulmer Brothers Inc.	incinerator	9.00E+00	513,662	3,566,083	8.00	1,000.00	0.03	18.50
Beaufort	BEA12	Daufuskie Island P&H Inc.	Air Curtain Incinerator	7.00E-01	511,295	3,552,724	7.42	633.00	5.00	10.09
Berkeley	BER01	Prouvost USA	Boiler 3	3.88E+00	622,554	3,684,017	65.00	375.00	15.00	4.00
Berkeley	BER02	Plusa, Inc. (Prouvost USA)	Boiler 2 Stack	4.23E+00	622,554	3,684,017	65.00	400.00	15.00	3.00
Berkeley	BER03	Bayer Corporation	ID#102, 103, 104,BldgB9-2	1.00E-02	600,041	3,649,772	101.00	105.00	53.00	2.33
Berkeley	BER04	Bayer Corporation	ID#600 & 601, C9-1/2	1.60E-01	600,041	3,649,772	50.00	122.00	52.00	3.50
Berkeley	BER05	Bayer Corporation	ID#552, C8-1/2	8.00E-02	600,041	3,649,772	50.00	80.00	0.03	0.66
Berkeley	BER06	Albany Int'l-Press Fabrics	Boiler #2	-2.91E+01	599,913	3,697,883	30.00	449.30	19.52	2.00
Berkeley	BER07	Albany Int'l-Press Fabrics	Boiler #3	3.43E+01	599,929	3,697,840	77.76	421.00	111.88	1.00
Berkeley	BER08	Albany Int'l-Press Fabrics	Boiler #4	-2.18E+01	599,976	3,697,836	32.00	601.00	17.06	2.00
Berkeley	BER09	Albany Int'l-Press Fabrics	Boiler #5	9.10E+00	599,925	3,697,847	75.79	170.30	21.52	2.08
Berkeley	BER10	Naval Weapons Station	Bldg 3107 Boiler #1	5.89E+00	595,791	3,641,505	24.00	350.00	0.03	1.00
Berkeley	BER11	Naval Weapons Station	Bldg 3107 Boiler #2	5.89E+00	595,788	3,641,501	24.00	350.00	0.03	1.00
Berkeley	BER12	Naval Weapons Station	Paint Booth Bldg 1659	6.80E-03	599,175	3,646,250	30.50	70.00	43.31	3.50
Berkeley	BER13	Alcoa - Mt. Holly	Baked Carbon Plant	6.74E+01	588,706	3,657,364	201.00	176.00	86.84	4.70
Berkeley	BER14	Alcoa - Mt. Holly	Scrubber Lines	8.49E+02	588,255	3,657,328	200.00	176.00	77.00	10.50
Berkeley	BER15	Alcoa - Mt. Holly	Cast House #50	9.00E-03	588,053	3,657,153	60.00	72.00	40.27	4.00
Berkeley	BER16	Alcoa - Mt. Holly	Cast House #51	8.10E-02	588,064	3,657,126	67.00	500.00	40.00	3.00
Berkeley	BER17	Alcoa - Mt. Holly	Cast House #52	4.30E-02	588,088	3,657,089	57.00	200.00	0.03	2.00
Berkeley	BER19	Alcoa - Mt. Holly	Diesel Fire Pump	5.20E-01	588,302	3,657,048	20.00	300.00	89.37	0.33
Berkeley	BER20	The Gates Rubber Company	Boiler #3	1.06E+01	593,399	3,673,883	50.00	400.00	36.47	2.00
Berkeley	BER21	The Gates Rubber Company	Coaters/Oxidize	1.60E-01	593,514	3,674,030	63.00	518.00	31.13	2.25
Berkeley	BER22	The Gates Rubber Company	Evaporator	2.27E+00	593,398	3,673,970	25.00	72.00	0.03	1.75
Berkeley	BER23	BP-Amoco Cooper River	ITEGEN	1.60E+00	604,672	3,648,420	9.00	1,187.00	217.40	0.66
Berkeley	BER24	BP-Amoco Cooper River	Boilers #1&2	-1.11E+03	604,836	3,648,885	100.00	290.00	38.90	7.00
Berkeley	BER25	BP-Amoco Cooper River	Boilers #3&4	9.52E+01	604,836	3,648,824	100.00	270.00	8.30	8.00
Berkeley	BER26	BP-Amoco Cooper River	UT Compressor #2	2.33E+00	604,749	3,648,875	10.00	770.00	212.90	0.98
Berkeley	BER27	BP-Amoco Cooper River	#1 Ox Compressors 1,2,3&4	3.36E+01	604,512	3,649,008	10.00	775.00	342.80	0.52
Berkeley	BER28	BP-Amoco Cooper River	#2 Ox Emergency Generator #3	1.42E+00	604,382	3,648,765	6.00	986.00	194.00	0.49
Berkeley	BER29	BP-Amoco Cooper River	WWT Compressors L-1 & L-2	6.00E+00	603,502	3,648,708	10.00	775.00	342.80	0.49
Berkeley	BER30	Santee Cooper - Cross	Units 1-4	5.00E+03	582,614	3,692,405	488.00	122.00	25.00	69.00
Berkeley	BER31	Santee Cooper - Cross	Unit 2	3.12E+03	582,614	3,692,405	600.00	150.00	70.00	22.00
Berkeley	BER32	JW ALUMINUM	MELT FURNACE #1-4	8.00E-02	588,658	3,654,970	85.00	1,622.00	52.10	4.50
Berkeley	BER33	JW ALUMINUM	HOLD FURNACE #1-3	5.40E+01	588,658	3,654,977	70.00	467.00	32.10	2.00
Berkeley	BER34	JW ALUMINUM	Hold Furnace #4-5	2.00E-02	588,583	3,654,977	70.00	467.00	32.10	2.00
Berkeley	BER35	JW ALUMINUM	ANNEALING #1-10	1.00E-01	588,705	3,655,022	45.00	275.00	16.70	1.67
Berkeley	BER36	JW ALUMINUM	ANNEALING #11	1.00E-02	588,851	3,655,022	49.00	275.00	10.25	2.17
Berkeley	BER37	Santee Cooper	Incinerator	-6.90E-01	595,255	3,673,829	20.00	950.00	0.03	0.83
Berkeley	BER38	S.C. Pipeline	Backup	1.00E-02	599,600	3,654,100	24.93	159.50	0.03	2.00
Berkeley	BER39	Berkeley Co. Water & Sanitatio	emergency generator	8.18E+00	596,817	3,646,583	16.00	1,053.00	176.00	1.33
Berkeley	BER40	Nucor Steel	Baghouse	9.75E+01	603,968	3,652,492	175.00	275.00	95.34	21.10
Berkeley	BER41	Nucor Steel	Baghouse	3.25E+01	604,065	3,652,374	150.00	150.00	68.27	17.00
Berkeley	*BER42*	*Nucor Steel*	*Melt Shop Roof Monitor*	*9.50E-02*	*604,250*	*3,652,302*	*126.50*	*16.37*	*58.14*	
Berkeley	*BER43*	*Nucor Steel*	*Tundish Dryer Monitor*	*9.50E-03*	*604,259*	*3,652,239*	*126.50*	*1.41*	*58.14*	
Berkeley	*BER44*	*Nucor Steel*	*Beam Mill Roof Monitor*	*6.00E-02*	*604,165*	*3,652,211*	*126.50*	*8.17*	*58.14*	
Berkeley	BER45	Nucor Steel	Tunnel Furnace 1 Stack 1	4.80E-02	604,327	3,652,308	112.50	1,050.00	27.00	7.51
Berkeley	BER46	Nucor Steel	Tunnel Furnace 1 Stack 2	3.02E-02	604,415	3,652,281	112.50	1,050.00	27.00	7.51
Berkeley	BER47	Nucor Steel	Tunnel Furnace 2	4.80E-02	604,311	3,652,245	112.50	1,050.00	27.00	7.51
Berkeley	BER48	Nucor Steel	Reheat Furnace	1.11E-01	604,206	3,652,097	150.00	1,000.00	41.10	7.51
Berkeley	*BER49*	*Nucor Steel*	*Tunnel Furnace No. 1 Roof Monitor*	*1.20E-02*	*604,370*	*3,652,272*	*55.00*	*14.60*	*23.26*	
Berkeley	*BER50*	*Nucor Steel*	*Tunnel Furnace No. 2 Roof Monitor*	*1.20E-02*	*604,365*	*3,652,253*	*55.00*	*14.60*	*23.26*	
Berkeley	BER51	Nucor Steel	Pickle Line #1 Boiler	1.80E-02	604,604	3,652,025	74.90	550.00	35.00	2.00
Berkeley	*BER52*	*Nucor Steel*	*Annealing Furnaces*	*7.22E-02*	*604,596*	*3,651,944*	*85.50*	*1.87*	*37.80*	
Berkeley	BER53	Nucor Steel	Galvanizing Furnace Stack	5.00E-02	604,520	3,651,882	130.00	700.00	24.70	7.00
Berkeley	BER54	Nucor Steel	Pickle Line No. 2 Boilers	1.83E-02	604,748	3,652,018	75.00	550.00	35.00	2.00
Berkeley	BER55	Nucor Steel	Vacuum Tank Degasser Boiler	3.00E-02	604,286	3,652,310	141.50	450.00	39.63	3.00
Berkeley	BER56	MG Industries	Vaporization Boiler	1.20E-02	605,750	3,651,950	12.50	400.00	0.03	3.67
Berkeley	BER57	Fortifiber Coporation	Gas Fired Paper	2.00E-03	589,288	3,827,842	30.00	330.00	133.60	0.50
Berkeley	BER58	Fortifiber Coporation	Air Dryer	6.00E-03	609,501	3,643,143	30.00	471.00	88.87	1.42
Berkeley	BER59	Santee River Rubber Co.	Air Dryer	1.00E-03	609,501	3,643,143	70.00	173.00	0.03	3.46
Berkeley	BER60	Santee River Rubber Co.	Primary Dryer	1.00E-03	609,501	3,643,143	70.00	134.00	0.03	4.63
Berkeley	BER61	Santee River Rubber Co.	Secondary Dryer	1.00E-03	609,501	3,643,143	60.00	123.00	0.03	3.54
Berkeley	BER62	Corning, Inc.	Furnaces 1 and 2 (EP-2)	1.08E-02	585,500	3,654,000	75.00	225.00	98.42	4.80
Berkeley	BER63	Corning, Inc.	Furnace 3 (EP-1)	5.40E-03	585,500	3,654,000	75.00	225.00	98.75	3.40
Berkeley	BER64	Corning, Inc.	Annealing Furnaces & Supply Heaters	1.30E-02	585,500	3,654,000	45.00	350.00	58.30	3.30
Berkeley	BER65	Corning, Inc.	Emergency Generator (EP-7)	9.52E-01	585,500	3,654,000	43.00	900.00	152.20	0.67
Berkeley	BER66	Corning, Inc.	Boiler 1 (EP-8)	1.14E-02	585,500	3,654,000	50.00	450.00	22.00	2.17
Berkeley	BER67	Corning, Inc.	Boiler 2 (EP-9)	1.14E-02	585,500	3,654,000	50.00	450.00	22.00	2.17
Berkeley	*BER68*	*Detyens Shipyard*	*3 mobile hydroblasting units*	*5.39E-01*	*609,511*	*3,643,494*	*19.00*	*70.01*	*423.00*	*-38.90*
Berkeley	BER69	Terranova Forest Products	9.0 MMBut/hr gas-fired Curing Oven	4.20E-03	601,316	3,640,838	20.00	100.00	0.03	2.00
Berkeley	BER70	DAK Americas LLC	Boiler 1	1.41E+00	598,857	3,658,125	150.00	320.00	35.22	5.00
Berkeley	BER71	DAK Americas LLC	Boiler 2	1.41E+00	598,851	3,658,142	150.00	320.00	42.68	5.00
Berkeley	BER72	DAK Americas LLC	Vaporizors 1-4	6.45E+01	598,875	3,658,116	150.00	629.00	15.03	4.27
Berkeley	BER73	Williams Technology	Dyno1 - Engine Testing	1.00E-02	580,517	3,654,949	15.00	125.00	0.03	0.17
Berkeley	BER74	Williams Technology	Dyno2 - Engine Testing	1.00E-02	580,520	3,654,946	15.00	125.00	0.03	0.17
Calhoun	CAL01	Columbia Energy Center	Auxiliary Boiler 1&2	4.20E+01	498,356	3,747,530	150.00	350.00	69.90	5.50
Calhoun	CAL02	Columbia Energy Center	Auxiliary Boiler 3	3.17E+01	498,375	3,747,503	150.00	307.00	66.30	7.00
Calhoun	CAL03	Columbia Energy Center	Combustion Turbine 1&2	1.98E+02	498,312	3,747,499	200.00	248.00	64.60	19.00
Charleston	CHA01	MeadWestvaco	No. 4 Lime Kiln	3.69E+00	596,565	3,640,468	114.00	152.00	26.20	5.84
Charleston	CHA02	MeadWestvaco	No. 5 Lime Kiln	2.16E+01	596,489	3,640,493	213.00	349.00	58.53	6.00
Charleston	CHA03	MeadWestvaco	KREC004 Recovery Boiler #1	4.78E-02	596,666	3,640,329	411.00	327.00	68.40	11.40
Charleston	CHA04	MeadWestvaco	KREC005 East SDTV #1	7.38E+00	596,680	3,640,335	258.00	170.00	29.50	3.94
Charleston	CHA05	MeadWestvaco	KREC006 West SDTV #1	7.38E+00	596,669	3,640,342	258.00	170.00	29.50	3.94
Charleston	CHA06	MeadWestvaco	KWY026 Temp Mobile Chip Screen	8.73E-02	596,382	3,640,520	7.55	350.00	0.03	0.17
Charleston	CHA07	MeadWestvaco	KWY041 Temp Mobile Bark Screen	8.73E-02	596,169	3,640,389	7.55	350.00	0.03	0.17
Charleston	CHA08	MeadWestvaco	TALLSTK	-9.40E+02	596,798	3,640,316	301.00	335.00	104.00	11.00
Charleston	CHA09	MeadWestvaco	PB5 Power Boiler 5	-6.98E+00	596,829	3,640,328	157.00	170.00	87.90	7.50
Charleston	CHA10	Rhodia	Boiler #1	1.27E+00	596,761	3,633,258	40.00	350.00	46.10	2.00
Charleston	CHA11	Rhodia	Boiler #2	7.08E+01	596,764	3,633,250	65.00	350.00	12.00	4.53
Charleston	CHA12	Rhodia	Thermal Oxidizer Unit	3.40E+00	596,930	3,633,159	63.00	136.00	24.90	3.02
Charleston	CHA13	Rhodia	old Boiler #1&2	-1.28E+02	596,764	3,633,250	65.00	350.00	21.00	4.53

Table A-1. Regional Inventory Sources

County	ID	Company Name	Stack Details	SO_2 Emissions (lb/hr)	UTM East (m)	UTM North (m)	Height (ft)	Temp °F	Modeled Velocity (ft/s)	Diameter (ft)
Charleston	CHA14	Allied Terminal	Superior Boiler	2.18E+01	598,201	3,632,234	58.30	480.00	26.32	1.67
Charleston	CHA15	Allied Terminal	Daniels Heater	1.31E+01	598,210	3,632,268	50.00	750.00	33.10	2.50
Charleston	CHA16	RM Engineered Products	Boiler 1	2.04E+01	595,779	3,638,620	51.00	413.00	46.40	2.33
Charleston	CHA17	RM Engineered Products	Boiler 2	-7.36E+01	595,786	3,638,628	70.00	500.00	15.20	4.00
Charleston	CHA18	Charleston AFB	Boiler #4	1.19E+00	588,399	3,640,643	42.00	300.00	0.03	1.20
Charleston	CHA19	Charleston AFB	Boiler #6	2.13E+00	588,399	3,640,643	19.00	300.00	0.03	1.16
Charleston	CHA20	Charleston AFB	Boiler #7	1.17E+00	588,399	3,640,643	33.00	425.00	22.50	1.00
Charleston	CHA21	Charleston AFB	Boiler #8	2.00E-03	588,399	3,640,643	28.00	300.00	0.03	0.83
Charleston	CHA22	Charleston AFB	545 Engine Test Cell	4.00E+00	588,399	3,640,643	48.00	188.00	55.10	30.38
Charleston	CHA23	Charleston AFB	hot water heater	8.00E-03	589,177	3,640,573	28.00	450.00	34.00	1.67
Charleston	CHA24	Charleston AFB	Air Handler 1 Boiler	9.00E-03	590,302	3,640,578	94.00	130.00	0.03	1.67
Charleston	CHA25	Charleston AFB	Air Handler 2 Boiler	9.00E-03	589,003	3,640,535	94.00	130.00	0.03	1.67
Charleston	CHA26	Medical University of SC	Old S-1 Boilers	-2.22E+02	598,460	3,627,790	150.00	457.00	0.03	6.00
Charleston	CHA27	Medical University of SC	S-1 Boilers	5.10E+01	598,480	3,627,765	65.00	475.00	0.03	3.67
Charleston	CHA28	Medical University of SC	S-7&8 StromBldg Superior Boiler B770-	1.36E+01	598,500	3,627,740	182.00	450.00	0.03	2.00
Charleston	CHA29	Medical University of SC	SAC-1 Boiler	3.20E+00	598,460	3,627,690	95.00	350.00	36.80	1.00
Charleston	CHA30	Medical University of SC	HCC-1&2 Boiler	1.17E+01	598,540	3,627,700	102.00	350.00	0.03	1.67
Charleston	CHA31	Medical University of SC	BSB-2&3 Boiler	3.44E+00	598,560	3,627,690	88.00	330.00	24.60	3.00
Charleston	CHA32	Medical University of SC	S-13, S-14, S-15 Boilers	2.59E+00	598,585	3,627,580	97.70	250.00	42.50	1.00
Charleston	CHA33	City of Chas. Sludge Inciner	Incineration scrubber Exhaust	1.10E+00	596,795	3,624,871	45.00	155.00	41.67	4.00
Charleston	CHA34	GS Roofing Products	RTO	1.90E-02	593,014	3,634,152	75.00	494.00	43.07	2.50
Charleston	CHA35	Kinder Morgan Bulk Terminals	Boiler	4.22E+00	599,450	3,632,658	40.00	440.00	9.84	3.00
Charleston	CHA36	SCE&G - Hagood	Combustion Turbine	6.30E+02	597,038	3,632,312	125.00	977.00	150.00	16.00
Charleston	CHA37	SCE&G - Hagood	Reduction: Boiler 1	-7.20E+02	597,038	3,632,342	125.00	350.00	49.10	11.00
Charleston	CHA38	SCE&G - Hagood	Reduction: Boiler 2	-7.20E+02	597,038	3,632,342	125.00	350.00	49.10	11.00
Charleston	CHA39	SCE&G - Hagood	Reduction: Boiler 3	-1.48E+03	597,038	3,632,342	125.00	340.00	43.20	11.00
Charleston	CHA40	Charleston Packaging Co.	Boiler 1	6.00E-03	596,696	3,634,940	38.00	275.00	0.03	2.00
Charleston	CHA41	Charleston Packaging Co.	Boiler 2	6.00E-03	596,696	3,634,940	38.00	275.00	0.03	2.00
Charleston	CHA42	Siebe North, Inc.	boiler 1	7.50E-01	593,382	3,634,366	28.40	400.00	0.03	1.64
Charleston	CHA43	Charleston Steel & Metal Co.	EP01	6.40E+00	598,716	3,630,618	30.00	1,900.00	13.70	2.00
Charleston	CHA44	Kinder Morgan Bulk Terminals	Dryer/Baghouse	3.00E-03	595,953	3,639,214	40.00	180.00	41.70	5.10
Charleston	CHA45	Lockheed Martin Aeronautical	1950&1951	-3.40E+00	592,852	3,634,372	37.00	430.00	0.03	0.70
Charleston	CHA46	Lockheed Martin Aeronautical	1964 & 1965	-2.00E-02	592,907	3,634,341	34.00	340.00	0.03	6.80
Charleston	CHA47	Lockheed Martin Aeronautical	1966	-4.00E-03	592,916	3,634,285	34.00	740.00	0.03	6.80
Charleston	CHA48	Roper Hospital	S-01&2 Boiler 1&2	3.20E+00	598,330	3,627,700	70.00	375.53	29.53	2.00
Charleston	CHA49	Roper Hospital	S-03 Generator 9&10	1.47E+00	598,300	3,627,650	33.00	1,018.00	0.03	0.67
Charleston	CHA50	R.H. Johnson VA Medical Center	Boiler 1,2,3	6.00E+00	597,991	3,627,723	70.00	425.00	45.00	2.30
Charleston	CHA51	R.H. Johnson VA Medical Center	Incinerator	1.37E+00	597,991	3,627,623	80.00	1,318.00	33.76	2.10
Charleston	CHA52	Moore Drums	Reclam Furnace	8.10E-01	592,909	3,634,604	51.50	500.00	60.84	2.21
Charleston	CHA53	Moore Drums	Fuel Oil Boiler	-1.67E+00	593,039	3,634,534	25.75	375.00	37.89	0.92
Charleston	CHA54	Moore Drums	Naturlgas boilr	1.00E-02	593,045	3,634,536	30.33	395.00	7.01	1.96
Charleston	CHA55	Tarmac America	Steam Generator	1.00E+00	599,200	3,623,878	22.00	300.00	0.03	0.25
Charleston	CHA56	South Carolina Farm Bureau	Cambell Dryer	-1.50E-02	597,467	3,641,286	70.00	160.00	0.03	6.79
Charleston	CHA57	Trident Medical Center	Boiler 1&2	2.10E+00	586,593	3,648,706	40.00	420.00	40.30	2.00
Charleston	CHA58	Broyhill Furniture	14MMBut/hr Boiler	7.00E-02	578,565	3,652,796	57.00	500.00	22.00	3.50
Charleston	CHA59	MeadWestvaco Chemical Division	Boiler #9	5.48E+00	596,337	3,640,139	35.10	650.00	0.03	1.84
Charleston	CHA60	MeadWestvaco Chemical Division	Spray Dryer	2.30E+00	596,368	3,640,184	85.00	140.00	40.70	6.00
Charleston	CHA61	MeadWestvaco Chemical Division	Kettle Thermal Oxidizer	1.25E+00	596,432	3,640,044	100.00	190.00	65.00	3.00
Charleston	CHA62	MeadWestvaco Chemical Division	Process Tank Point Sources	-7.90E-02	596,320	3,640,228	45.92	87.80	0.57	1.35
Charleston	CHA63	MeadWestvaco Chemical Division	Poly Process Tank Point Sources	-1.75E+01	596,344	3,640,187	32.00	87.80	0.03	0.33
Charleston	CHA64	Siebe-North, Inc.-Butyl 2	Boiler 1&2	8.52E+00	592,008	3,636,245	38.32	400.00	29.83	1.33
Charleston	CHA65	SC Department of Natural Resources	two 5.5 MMBtu/hr boiler	5.49E+00	602,891	3,624,118	25.00	340.00	0.03	34.05
Charleston	CHA66	North Charleston Sewer Dist.	incinerator	7.40E+00	598,677	3,632,593	55.25	98.00	28.49	1.87
Charleston	CHA67	Foster Wheeler	Boiler SG-201A	8.00E+01	597,800	3,634,000	249.00	300.00	52.00	5.34
Charleston	CHA68	The Scotts Company	Thermal Oxidizer 1	2.13E+00	587,898	3,642,750	47.00	602.00	39.60	3.00
Charleston	CHA69	The Scotts Company	Thermal Oxidizer 2	1.01E+01	587,894	3,642,709	50.00	350.00	45.12	3.17
Charleston	CHA70	Englehard Corp - Mearl LLC	Mica Heat Treating Furnace (EP01)	4.50E-03	587,708	3,642,987	38.00	1,300.00	8.00	3.00
Charleston	CHA71	Englehard Corp - Mearl LLC	Steam Boiler No. 1 (EP05)	7.50E-03	587,708	3,642,987	38.00	500.00	40.00	2.80
Charleston	CHA72	ExxonMobil	Boiler	6.34E+00	598,745	3,631,800	55.00	450.00	32.70	1.67
Charleston	CHA73	Deytens Shipyards	Boiler #2	3.10E+00	596,588	3,636,368	25.00	610.00	8.76	2.00
Charleston	CHA74	Deytens Shipyards	Boiler #3	1.36E+00	596,732	3,636,547	12.00	580.00	21.23	1.00
Charleston	CHA75	Bon Secours St. Francis Xavier	Boiler 1&2	1.76E+00	589,814	3,630,588	44.50	445.00	30.38	2.00
Charleston	CHA76	Bon Secours St. Fancis Xavier	Generator 1&2	9.00E-01	589,714	3,629,588	50.00	1,026.00	227.25	0.83
Charleston	CHA77	Bon Secours St. Francis Xavier	Generator 3	4.93E-01	590,000	3,630,500	55.00	1,026.00	352.00	0.70
Charleston	CHA78	City of Charleston-Hanahan	diesel generator 1&2	8.40E-01	591,091	3,643,058	24.00	1,050.00	424.20	0.67
Charleston	CHA79	City of Charleston-Hanahan	diesel generator 6&7	2.38E+00	591,091	3,643,058	32.80	955.00	318.47	0.50
Charleston	CHA80	Cogen South LLC	Main Boiler	4.02E+02	596,560	3,640,005	403.00	161.00	56.40	11.00
Charleston	CHA81	Cogen South LLC	Aux Boilers	3.11E+02	596,492	3,640,081	243.00	370.00	68.30	10.00
Charleston	CHA82	Palmetto Lime LLC	Kiln stack	3.68E+00	599,290	3,632,145	295.50	355.00	61.00	7.00
Charleston	CHA83	Charleston Technical Center	CTC Boiler	3.67E+00	595,998	3,640,015	63.50	300.00	41.34	1.57
Charleston	CHA84	Green Oasis Environmental	EE1	5.04E+00	599,000	3,631,800	40.00	678.00	21.50	1.65
Charleston	CHA85	Mount Pleasant Waterworks	900 kW Generator	4.88E+00	609,954	3,630,490	20.00	897.00	0.03	79.29
Charleston	CHA86	Mount Pleasant Waterworks	600 kW Generator	3.25E+00	609,954	3,630,490	18.00	935.00	0.03	101.21
Charleston	CHA87	Avebe (SC)	Boiler	1.00E-02	587,624	3,644,733	30.00	400.00	21.22	1.50
Charleston	CHA88	Avebe (SC)	Air Heater	1.00E-02	587,624	3,644,733	30.00	580.00	33.09	2.20
Charleston	CHA89	College of Charleston	Boiler 1	7.54E+00	600,095	3,627,983	43.00	430.00	36.61	2.83
Charleston	CHA90	College of Charleston	Boiler 2	7.54E+00	600,100	3,627,990	43.00	430.00	36.61	2.83
Charleston	CHA91	Mt. Pleasant Waterworks	WG-7 peak shaving generator	1.13E+00	609,132	3,631,867	14.00	935.00	0.03	0.50
Charleston	CHA92	American Tank Fabrication Co.	TF-F1	1.00E-02	596,681	3,636,603	54.00	400.00	0.03	3.33
Charleston	CHA93	Heritage Synfuel Binders	Hot Oil Heater	2.45E+00	598,547	3,631,941	35.00	400.00	13.00	1.17
Charleston	CHA94	Cummins MerCruiser Diesel, LLC	ETC1015	1.61E+00	591,061	3,634,217	46.92	500.00	22.34	0.49
Charleston	CHA95	Cummins MerCruiser Diesel, LLC	ETC1618	1.34E+00	591,043	3,634,209	46.92	500.00	22.34	0.82
Charleston	CHA96	Mt. Pleasant Waterworks Plant #4	Generator	1.25E+00	615,507	3,638,222	17.50	935.00	84.00	1.00
Charleston	CHA97	Vought Aircraft Industries, Inc.	Autoclave Stacks 1,2,3	2.64E-02	590,199	3,637,620	69.00	500.00	82.00	2.00
Charleston	CHA98	Holset Engineering	Test Cell 1	9.80E-02	582,213	3,647,898	45.00	500.00	176.00	0.50
Charleston	CHA99	Holset Engineering	Test Cell 2	9.80E-02	582,213	3,647,898	45.00	500.00	176.00	0.50
Charleston	CHA100	Holset Engineering	Test Cell 3	9.80E-02	582,213	3,647,898	45.00	500.00	176.00	0.50
Charleston	CHA101	Holset Engineering	Test Cell 4	9.80E-02	582,213	3,647,898	45.00	500.00	176.00	0.50
Charleston	CHA102	Holset Engineering	Test Cell 5	9.80E-02	582,213	3,647,898	45.00	500.00	176.00	0.50
Charleston	CHA103	Holset Engineering	Test Cell 6	4.14E-01	582,213	3,647,898	45.00	500.00	234.70	0.50
Chesterfield	CHE01	Dixie Yarns- Caroknit Plant	Boiler #1	7.07E+01	556,189	3,824,502	50.00	550.00	23.00	3.94
Chesterfield	CHE02	Dixie Yarns- Caroknit Plant	Dryer #6	5.60E-03	556,189	3,824,502	28.00	248.00	52.00	1.94
Chesterfield	CHE03	TALLEY METALS TECHNOLOGY, INC.	BOILERS 1 AND 2 (stk 8)	1.20E-01	576,340	3,810,152	35.10	400.00	0.03	2.00
Chesterfield	CHE04	Talley Metals Technology	Soaking Furnace (stk 22)	1.33E-01	573,524	3,810,052	46.00	1,400.00	38.11	3.50
Chesterfield	CHE05	Talley Metals Technology,Inc.	Boiler 3 (stk 13)	9.90E-02	576,333	3,810,157	40.00	1,400.00	38.11	1.84
Chesterfield	CHE06	Talley Metals Technology,Inc.	HTF-7 (stk 19/20)	1.44E-01	576,425	3,810,102	35.00	600.00	0.03	4.00
Chesterfield	CHE07	Talley Metals Technology,Inc.	HT Furnaces 1-6(stk 18)	1.32E-02	576,398	3,810,118	46.00	512.00	38.11	3.50
Chesterfield	CHE08	Talley Metals Technology,Inc.	HTF 8, RH Furnace 1(stk 31)	2.20E-02	576,368	3,810,158	40.00	783.00	38.11	3.50
Chesterfield	CHE09	Talley Metals Technology,Inc.	RHF 2, BBU 2, CBU 1-2(stk 32)	9.80E-03	576,369	3,810,155	40.00	783.00	38.11	3.50
Clarendon	CLA01	Aircap Industries	boilers	-1.72E+02	576,339	3,727,618	42.00	385.00	47.70	2.00
Darlington	DAR01	Nucor Steel	Baghouse	-2.85E+02	601,809	3,804,275	75.00	200.00	74.10	21.00

Table A-1. Regional Inventory Sources

County	ID	Company Name	Stack Details	SO_2 Emissions (lb/hr)	UTM East (m)	UTM North (m)	Height (ft)	Temp °F	Modeled Velocity (ft/s)	Diameter (ft)
Darlington	DAR02	Nucor Steel Darlington	SILO-1	2.85E+02	601,813	3,804,543	113.00	68.00	30.10	0.75
Darlington	DAR03	Nucor Steel	Reheat Furnace 1	1.11E-01	601,570	3,804,053	75.00	689.00	60.40	5.00
Darlington	DAR04	Nucor Steel	Reheat Furnace 2	1.11E-01	601,572	3,803,963	75.00	689.00	60.40	5.00
Darlington	DAR05	Nucor Steel	Reheat Furnace 3	1.11E-01	601,719	3,804,080	75.00	689.00	60.40	5.00
Darlington	*DAR06*	*Nucor Steel*	*Melt Shop 3 Roof Monitors*	*5.88E-01*	*601,769*	*3,804,158*	*123.60*	*24.00*	*51.10*	
Darlington	*DAR07*	*Nucor Steel*	*Old Melt Shop & Billet Cutting Roof*	*1.96E-02*	*601,639*	*3,804,117*	*63.00*	*61.00*	*29.30*	
Darlington	*DAR08*	*Nucor Steel*	*Space Heaters*	*2.40E-02*	*601,202*	*3,804,201*	*56.00*	*1.87*	*23.29*	
Darlington	DAR09	Carolina Power & Light	CT12	3.15E+02	576,344	3,808,662	60.00	1,010.00	106.00	20.00
Darlington	DAR10	Carolina Power & Light	CT13	3.15E+02	576,305	3,808,647	60.00	1,010.00	106.00	20.00
Darlington	DAR11	Galey & Lord Industries, Inc.	Dyeing Dept II	9.82E-03	606,458	3,821,150	39.00	120.00	0.03	2.50
Darlington	DAR12	Galey & Lord Industries, Inc.	Finishing Dept I	3.50E-03	606,665	3,820,843	36.52	80.30	0.03	1.71
Darlington	DAR13	Galey & Lord Industries, Inc.	Finishing Dept II	-2.40E-02	606,395	3,821,100	40.00	300.00	0.03	1.31
Darlington	DAR14	Sonoco Products	Kiln/Thermal Oxidizer	1.12E+01	585,901	3,805,336	101.00	400.00	61.00	3.50
Darlington	DAR15	Sonoco Products	Boiler #9	2.81E+01	585,889	3,805,210	150.00	230.00	43.40	4.75
Darlington	DAR16	Wellman -- Palmetto Plant	Dowtherm 6	5.00E-02	609,754	3,792,534	100.00	350.00	31.00	12.00
Darlington	DAR17	Wellman, Inc.	Dowtherm 7	5.00E-02	609,804	3,792,578	82.00	300.00	50.02	3.05
Darlington	DAR18	Wellman, Inc.	Common Stack	1.02E+02	609,810	3,792,566	100.00	350.00	31.00	12.00
Darlington	DAR19	Wellman, Inc.	boiler 4	6.00E-02	609,839	3,792,784	75.00	379.00	76.00	3.94
Darlington	DAR20	PowerSecure, Inc.	GEN1 - Generator	1.06E+00	609,179	3,792,693	16.50	716.00	255.58	1.18
Dorchester	DOR01	Giant Cement	Main Baghouse/Bypass Vent	5.40E+02	552,133	3,678,232	295.00	230.00	50.23	14.20
Dorchester	DOR02	Giant Cement	Kilns #4 & 5	-8.90E+02	552,147	3,678,286	174.90	260.00	59.06	9.84
Dorchester	DOR03	Giant Cement	Kilns #2 & 3	-6.82E+02	551,906	3,678,525	163.10	280.00	59.06	9.84
Dorchester	DOR04	Giant Cement	Marl Dryer Scrubber	-3.25E+01	551,934	3,678,397	49.90	160.00	69.23	3.61
Dorchester	DOR05	Blue Circle Cement	Stack #1	1.07E+02	551,000	3,676,300	100.00	220.00	70.00	10.00
Dorchester	DOR06	Blue Circle Cement	Stack #36	5.33E+01	551,017	3,676,238	115.00	180.00	11.91	6.00
Dorchester	DOR07	Westvaco Lumber Mill	Kiln 3-Stack 3C	3.70E-01	575,303	3,654,922	26.00	240.00	0.03	0.56
Dorchester	DOR08	Westvaco Lumber Mill	Kiln 4-Stack 5	6.03E-01	575,294	3,654,911	30.00	240.00	0.03	51.57
Dorchester	DOR09	Robert Bosch Corporation	Boiler 5	2.56E+00	584,008	3,641,260	33.14	305.00	17.06	1.84
Dorchester	DOR10	Robert Bosch Corporation	Boiler 6	2.56E+00	584,012	3,641,258	33.14	305.00	17.06	1.84
Dorchester	DOR11	Showa Denko Carbon	Carbottom furn. Incinerator (S7)	3.05E+01	561,220	3,661,343	80.00	1,450.00	200.00	7.92
Dorchester	DOR12	Showa Denko Carbon	Graphitizing (S22)	1.33E+02	561,164	3,661,344	190.00	190.00	75.45	7.50
Dorchester	*DOR13*	*Showa Denko Carbon*	*roof moniters (VS1-6)*	*4.43E+01*	*561,117*	*3,661,336*	*76.00*	*43.20*	*31.20*	
Dorchester	DOR14	Summerville Medical Center	boiler 1	1.20E+00	579,022	3,647,533	26.20	396.00	24.00	1.00
Dorchester	DOR15	Summerville Medical Center	boiler 2	1.20E+00	579,022	3,647,533	26.20	396.00	24.00	1.00
Dorchester	DOR16	Fibron International Corp	FiberizgProcess1	7.50E-03	573,372	3,656,366	52.00	190.00	78.70	4.00
Dorchester	DOR17	Fibron International Corp	FiberizgProcess2	7.50E-03	573,362	3,656,355	52.00	190.00	78.70	4.00
Dorchester	DOR18	Fibron International Corp	FiberizgProcess3	7.50E-03	573,350	3,656,342	52.00	190.00	78.70	4.00
Dorchester	DOR19	Fibron International Corp	FiberizgProcess4	7.50E-03	573,339	3,656,330	52.00	190.00	78.70	4.00
Dorchester	DOR20	Fibron International Corp	FiberizgProcess5	7.50E-03	573,328	3,656,318	52.00	190.00	78.70	4.00
Dorchester	DOR21	Chamber Oakridge Landfill	flare	1.50E-01	558,610	3,666,531	22.00	1,400.00	40.00	0.67
Dorchester	DOR22	Dausey	boiler	1.36E+00	539,542	3,671,808	18.00	450.00	0.03	1.17
Dorchester	DOR23	Raisio Staest US Inc	Steam Boiler	3.00E-02	573,000	3,657,000	30.00	550.00	40.00	2.00
Dorchester	DOR24	Raisio Staest US Inc	Hot Oil System	1.00E-02	573,000	3,657,000	30.00	630.00	22.00	1.67
Dorchester	DOR25	Cemplank Inc.	0021 (Boiler)	1.19E+01	572,861	3,657,278	44.00	469.00	36.75	2.33
Dorchester	DOR26	Souteastern Soil Recovery	Soil Treatment Unit	1.06E+01	573,364	3,655,741	30.70	300.00	46.40	4.00
Dorchester	DOR27	Banks Construction Co.	Drum Mixer/Dryer	2.32E+01	573,400	3,665,700	30.00	240.00	88.70	3.00
Dorchester	DOR28	Banks Construction Co.	Hot Oil Heater	1.05E+00	573,400	3,665,700	14.00	600.00	10.80	1.00
Florence	FLO01	Talon, Inc.	boiler 1 - stack 17	-7.85E+01	614,192	3,746,291	43.92	350.00	37.20	3.33
Florence	FLO02	Talon, Inc.	boiler 2 - stack 18	-7.85E+01	614,192	3,746,294	46.08	350.00	37.20	3.17
Florence	FLO03	A.C. Monk	steam boiler E	-7.60E+00	615,250	3,748,000	37.70	340.00	27.00	2.00
Florence	FLO04	Stone Container	Recovery Boiler	3.18E+02	632,600	3,779,600	173.00	357.20	101.13	6.17
Florence	FLO05	Stone Container	cogen boiler 4	1.15E+03	632,600	3,779,600	250.00	366.90	64.79	12.00
Florence	FLO06	Stone Container	incinerator	4.50E+00	632,600	3,779,600	100.00	192.00	12.10	3.50
Florence	FLO07	Wellman	Exhaust 113 Scrubber	1.92E+01	643,884	3,744,592	50.00	147.20	51.50	3.50
Florence	FLO08	McLeod Regional Medical Center	boiler 1	-1.08E+01	614,200	3,784,500	30.20	400.00	37.73	2.00
Florence	FLO09	McLeod Regional Medical Center	boiler 2	-1.08E+01	614,200	3,784,500	30.20	400.00	37.73	2.00
Florence	FLO10	McLeod Regional Medical Center	boiler 3	-1.08E+01	614,200	3,784,500	30.20	400.00	37.73	2.00
Florence	FLO11	McLeod Regional Medical Center	boiler 4	4.32E+00	614,200	3,784,500	42.00	400.00	33.79	1.30
Florence	FLO12	McLeod Regional Medical Center	boiler 5	4.32E+00	614,200	3,784,500	42.00	400.00	33.79	1.30
Florence	FLO13	McLeod Regional Medical Center	boiler 7	1.29E+01	614,200	3,784,500	33.00	364.00	40.37	2.00
Florence	FLO14	McLeod Regional Medical Center	boiler 8	1.29E+01	614,200	3,784,500	33.00	364.00	40.37	2.00
Florence	FLO15	McCall Farms	Boiler	4.71E+01	614,855	3,768,666	45.00	350.00	42.00	2.97
Florence	FLO16	McCall Farms	backup boiler	2.59E+01	614,855	3,768,666	40.00	127.00	82.00	2.00
Florence	FLO17	McCall Farms	Boiler#1	7.50E-01	614,855	3,768,666	40.00	400.00	58.00	3.56
Florence	FLO18	McCall Farms	Boiler#1	2.85E+01	614,855	3,768,666	40.00	400.00	58.00	3.56
Florence	FLO19	McCall Farms	Boiler#2	3.93E+01	614,987	3,768,359	36.00	350.00	34.80	2.97
Florence	FLO20	McCall Farms	Boiler#2	3.50E-01	614,855	3,768,666	28.00	350.00	12.40	3.00
Florence	FLO21	McCall Farms	Boiler#3	6.29E+01	614,987	3,768,359	48.00	350.00	39.00	3.00
Florence	FLO22	Roche Carolina	BOILERS	3.00E-01	629,000	3,786,850	51.00	520.00	32.60	4.20
Florence	FLO23	Roche Carolina	Primary Thermal Oxidizer	1.75E+01	628,939	3,786,580	160.00	170.00	40.00	1.67
Florence	FLO24	Roche Carolina	Reserve Thermal Oxidizer	7.80E+00	628,920	3,786,560	50.00	1,000.00	18.90	1.67
Florence	FLO25	Roche Carolina	flare	7.00E-02	629,020	3,786,870	10.00	1,831.00	65.62	2.07
Georgetown	GEO01	Trebol USA, Inc.	Spray Dryer	4.50E-03	633,591	3,700,674	30.50	280.00	21.67	1.00
Georgetown	GEO02	International Paper - Pulp & Paper Mill	power boiler	-4.88E+02	658,200	3,692,500	70.00	550.00	40.00	8.00
Georgetown	GEO03	International Paper - Pulp & Paper Mill	common stack	-3.25E+03	658,150	3,692,600	200.00	470.00	60.00	14.50
Georgetown	GEO04	International Paper - Pulp & Paper Mill	lime kiln	-4.17E+01	658,050	3,692,550	100.00	170.00	32.80	6.00
Georgetown	GEO05	International Paper - Pulp & Paper Mill	lime kiln	-4.16E+01	658,040	3,692,560	100.00	170.00	32.80	6.00
Georgetown	GEO06	International Paper - Pulp & Paper Mill	7&8 power boilers	-9.53E+02	658,180	3,692,540	200.00	470.00	60.00	14.50
Georgetown	GEO07	International Paper - Pulp & Paper Mill	power boiler 1&2	9.57E+02	658,220	3,692,587	280.00	372.00	40.03	17.06
Georgetown	GEO08	International Paper - Pulp & Paper Mill	recovery boiler 1	2.30E+01	658,275	3,692,581	235.00	325.00	56.60	7.87
Georgetown	GEO09	International Paper - Pulp & Paper Mill	recovery boiler 2	5.66E+01	658,217	3,692,622	250.00	160.00	39.70	12.14
Georgetown	GEO10	International Paper - Pulp & Paper Mill	lime kiln 2	4.58E-01	658,105	3,692,592	95.14	158.00	23.00	5.91
Georgetown	GEO11	International Paper - Pulp & Paper Mill	NCG incinerator	9.13E+00	658,128	3,692,719	67.90	181.00	26.40	3.61
Georgetown	GEO12	International Paper - Pulp & Paper Mill	Black Liquor Oxidation Stage 2	1.57E+00	657,900	3,692,840	89.24	178.00	44.82	3.94
Georgetown	GEO13	International Paper - Pulp & Paper Mill	Container Division Sources	3.75E-01	657,900	3,692,840	26.90	410.00	0.03	2.30
Georgetown	GEO14	Georgetown Steel, Inc.	DRI Reduction Furnace	2.00E-02	659,006	3,693,450	30.00	68.00	33.00	1.64
Georgetown	GEO15	Georgetown Steel, Inc.	5	-9.49E+00	659,006	3,693,450	103.00	138.00	14.80	33.50
Georgetown	GEO16	Georgetown Steel, Inc.	Melt Shop Baghouse	3.57E+01	659,006	3,693,450	80.00	181.00	0.03	763.60
Georgetown	GEO17	Georgetown Steel, Inc.	8A	-1.47E+02	659,006	3,693,450	79.20	467.00	36.60	9.42
Georgetown	GEO18	Georgetown Steel, Inc.	PS	2.80E-01	659,006	3,693,450	92.75	291.00	44.90	11.70
Georgetown	GEO19	Santee Cooper - Winyah	Unit 3	1.68E+03	652,778	3,688,824	404.00	161.00	75.10	16.00
Georgetown	GEO20	Santee Cooper - Winyah	Unit 4	1.68E+03	652,719	3,688,819	404.00	161.00	75.10	16.00
Georgetown	GEO21	Santee Cooper - Winyah	Unit 1 Old Stack	-1.73E+03	652,900	3,688,850	404.00	300.00	60.01	18.00
Georgetown	GEO22	International Paper - Sampit Lumber	Gasification Boiler	7.90E-01	644,267	3,698,940	52.00	425.00	42.30	3.00
Georgetown	GEO23	Oneita Industries	PSD-Dryers	1.80E-02	634,095	3,702,924	22.50	250.00	0.03	1.70
Georgetown	GEO24	3V, Inc.	Steam Boiler 501	1.05E+01	652,537	3,691,875	64.00	465.00	32.70	2.50
Georgetown	GEO25	3V, Inc.	Steam BoilerBIF	1.75E+01	652,537	3,691,886	64.00	465.00	54.70	2.50
Georgetown	GEO26	3V, Inc.	Oil Heater	6.28E+00	652,537	3,691,954	52.00	399.00	16.00	2.58
Georgetown	GEO27	Georgetown Memorial Hospital	BOILER #1 & #2	5.61E+01	659,530	3,694,470	45.00	370.00	34.40	1.67
Georgetown	GEO28	Georgetown Memorial Hospital	removed two boilers	-5.40E+00	659,531	3,694,474	30.00	370.00	13.00	1.67
Georgetown	GEO29	Holnam - Georgetown Terminal	Diesel Engine #1	7.00E-02	659,213	3,692,290	13.50	815.00	142.40	0.50

Table A-1. Regional Inventory Sources

County	ID	Company Name	Stack Details	SO_2 Emissions (lb/hr)	UTM East (m)	UTM North (m)	Height (ft)	Temp °F	Modeled Velocity (ft/s)	Diameter (ft)
Georgetown	GEO30	Holnam - Georgetown Terminal	Diesel Engine #2	7.00E-02	659,205	3,692,287	13.50	815.00	142.40	0.50
Georgetown	GEO31	Holnam - Georgetown Terminal	Diesel Engine #3	7.00E-02	659,207	3,692,283	13.50	815.00	142.40	0.50
Georgetown	GEO32	Holnam - Georgetown Terminal	Diesel Engine #4	7.00E-02	659,214	3,692,286	13.50	815.00	142.40	0.50
Georgetown	GEO33	Holnam - Georgetown Terminal	Diesel Engine	1.40E-01	659,192	3,692,282	13.70	840.00	118.70	0.70
Georgetown	GEO34	International Paper - Container Facility	Steam Boiler	3.75E-01	658,173	3,692,039	26.90	410.00	0.03	2.30
Georgetown	GEO35	Praxair, Inc	Product Vaporizers	1.00E-02	658,694	3,692,939	32.80	400.70	0.03	0.67
Georgetown	GEO36	AGSC	EP5	4.88E-02	653,179	3,689,173	148.43	190.00	66.09	5.67
Georgetown	GEO37	AGSC	EP8	2.71E-02	653,167	3,689,161	148.43	325.00	73.46	4.33
Georgetown	GEO38	AGSC	EP9	2.71E-02	653,173	3,689,167	148.43	325.00	73.46	4.33
Georgetown	GEO39	AGSC	EP18	1.03E-01	653,283	3,689,277	65.62	165.00	69.29	7.00
Jasper	JAS01	SCE&G-Jasper Co. Generating Facility	Turbines 1-3	3.20E+02	488,357	3,580,065	190.00	278.00	72.60	18.00
Jasper	JAS02	Wasteco	ACI	6.30E-01	509,387	3,587,885	30.00	1,000.00	1.33	20.18
Lexington	LEX01	Voridian	HEAT1011	5.92E+01	498,930	3,746,940	120.10	401.00	24.51	3.94
Lexington	LEX02	Voridian	16M08 ID#6	-4.01E+01	498,864	3,746,962	74.80	750.00	18.30	3.00
Lexington	LEX03	Voridian	16M08 ID#7	-4.01E+01	498,864	3,746,962	74.80	400.70	11.60	3.00
Lexington	LEX04	Voridian	18K02-13	6.36E+01	498,727	3,746,520	120.10	400.00	23.50	3.28
Lexington	LEX05	Michelin Tire Corp	124_44	7.54E+01	473,400	3,755,000	120.00	280.00	46.80	1.22
Lexington	LEX06	SMI Steel SC	Baghouse #1 East Section	1.08E+01	495,162	3,757,793	85.00	230.00	9.52	29.86
Lexington	LEX07	SMI Steel SC	Baghouse #2 West Section	1.08E+01	495,140	3,757,784	85.00	230.00	9.52	29.86
Lexington	LEX08	SMI Steel SC	Roll Mill Reheat Furnace	3.44E+01	495,384	3,757,760	91.00	91.00	70.13	5.00
Lexington	*LEX09*	*SMI Steel SC*	*Melt Shop*	*2.18E-01*	*495,230*	*3,757,856*	*48.56*	*26.70*	*45.30*	
Lexington	LEX10	United Parcel Service - Air Hub	Generator	3.50E-02	489,962	3,754,514	13.85	922.70	1,136.00	0.50
Marion	MAR01	Cone Mills-Raytex Finishing	TR01B	9.00E-03	646,597	3,780,598	39.00	280.00	43.00	2.90
Marion	MAR02	Cone Mills-Raytex Finishing	TF03B	8.00E-03	646,597	3,780,598	40.50	300.00	46.77	2.33
Marion	MAR03	Cone Mills-Raytex Finishing	Boiler 1	-4.43E+01	646,597	3,780,598	35.50	384.00	25.00	2.00
Marion	MAR04	Cone Mills-Raytex Finishing	Boiler 2	2.24E+01	646,597	3,780,598	37.75	495.00	42.00	2.83
Marion	MAR05	Blumenthal Mills, Inc.	Boiler #2	2.51E+01	646,273	3,782,473	56.40	350.00	30.60	2.50
Marion	MAR06	Blumenthal Mills, Inc.	Tenter Frame #1	1.00E-02	646,349	3,782,473	27.80	300.00	20.00	3.08
Marlboro	MAL01	MOHAWK CARPETS-OAK RIVER MILL	Boiler 3	-1.63E+01	617,822	3,817,628	44.00	540.00	23.20	3.50
Marlboro	MAL02		Boiler 4	1.06E+01	617,745	3,818,066	50.00	416.00	33.50	2.00
Marlboro	MAL03		Boiler 5	1.06E+01	617,745	3,818,066	50.00	416.00	33.50	2.00
Marlboro	MAL04		Boiler 6	1.06E+01	617,745	3,818,066	50.00	416.00	33.50	2.00
Marlboro	MAL05	Willamette Industries	Recovery Boiler	2.17E+02	612,270	3,829,521	250.00	332.30	65.60	10.00
Marlboro	MAL06	Willamette Industries	Hog Fuel Boiler	4.95E+01	612,178	3,829,427	154.90	305.30	69.23	8.00
Marlboro	MAL07	Willamette Industries	Lime Kiln #1&#2	1.06E+01	612,330	3,829,392	142.10	434.90	101.00	4.00
Marlboro	MAL08	Willamette Industries	Smelt Dissolving Tank	4.90E+00	612,288	3,829,548	140.10	188.30	33.46	4.50
Marlboro	MAL09	Willamette Industries	NCG Incinerator	6.00E+00	612,225	3,829,468	51.84	167.00	56.10	1.51
Marlboro	MAL10	Willamette Industries	Package Boiler	5.00E-01	612,249	3,829,538	60.04	318.00	40.35	6.50
Marlboro	MAL11	Willamette Industries (ECCI)	Carbonator System	6.20E+00	612,381	3,829,413	54.13	154.00	7.71	2.99
Marlboro	MAL12	Willamette Industries (MDF)	TCO Control Device	1.03E-02	612,000	3,828,611	45.00	145.00	50.00	7.50
Marlboro	MAL13	Willamette Industries (MDF)	Dryer RTO	1.12E-01	613,135	3,829,089	44.90	145.00	50.00	7.50
Marlboro	MAL14	Willamette Industries (MDF)	Press RTO	1.00E-02	613,120	3,829,102	45.00	145.00	39.40	8.70
Marlboro	MAL15	Willamette Industries (MDF)	Hot Oil System	5.00E-01	613,137	3,829,154	44.90	199.00	45.00	1.30
Orangeburg	ORA01	Albemarle Corp	701 HE-950-1	7.18E-01	511,188	3,702,794	26.00	514.00	0.03	1.00
Orangeburg	ORA02	Albemarle Corp	701 HE-950-2	7.08E-01	511,179	3,702,794	27.00	450.00	0.03	1.50
Orangeburg	ORA03	Albemarle Corp	DR-3 Diesel Engine 11	2.60E-01	511,038	3,702,544	11.00	1,009.00	137.00	0.67
Orangeburg	ORA04	Albemarle Corp	HCN Diesel Engine 12	1.25E-01	511,098	3,702,453	12.00	939.00	178.00	0.50
Orangeburg	ORA05	Albemarle Corp	HCN Flare	4.20E-03	511,193	3,702,464	100.00	1,000.00	10.57	2.00
Orangeburg	ORA06	Holnam, Inc.	(81) #1 Kiln ESP	-4.78E+02	552,975	3,682,388	149.84	307.00	30.05	10.99
Orangeburg	ORA07	Holnam, Inc.	(82) #2 Kiln ESP	-1.49E+03	552,988	3,682,467	160.00	354.00	49.87	12.24
Orangeburg	ORA08	Holnam, Inc.	(94) Preheater/Precalciner Kiln	8.54E+02	553,206	3,682,052	359.25	244.00	51.80	20.00
Orangeburg	ORA09	Holnam, Inc.	(95) Coal Mill Vent	6.19E+01	553,170	3,682,082	137.80	185.00	77.36	4.27
Orangeburg	ORA10	SCE&G-Cope	Unit 1 Boiler	1.00E+03	497,200	3,691,400	524.80	150.71	49.00	23.00
Orangeburg	ORA11	Carolina Pole, Inc	Kiln Boiler	5.22E+01	559,488	3,692,767	51.00	400.00	52.00	2.00
Orangeburg	ORA12	Orangeburg Dept. of Public Utilities	Generator 1&2	5.40E+01	508,072	3,711,611	22.00	800.00	89.10	3.50
Orangeburg	ORA13	City of Orangeburg	Hot Oil Burner Exhaust	8.00E-03	513,426	3,700,069	33.50	650.00	14.99	2.00
Orangeburg	ORA14	City of Orangeburg	350 kW Generator	9.70E-01	513,426	3,700,069	19.00	1,219.70	475.43	0.54
Orangeburg	ORA15	City of Orangeburg	500 kW Generator	2.70E-01	513,426	3,700,069	19.00	1,219.70	475.43	0.54
Orangeburg	ORA16	City of Orangeburg	900 kW Generator	4.90E-01	513,426	3,700,069	17.88	865.10	920.14	0.54
Orangeburg	ORA17	Pennington Crossarm Co.	Boiler	4.26E+00	552,475	3,688,714	30.00	455.00	0.03	1.30
Richland	RIC01	Carolina Ceramics, Inc.	Kilns 3 & 4	2.67E+01	509,444	3,774,663	65.94	350.00	43.31	3.28
Richland	RIC02	Carolina Ceramics, Inc.	Brick Dryers for Kilns 3 & 4	2.40E-03	509,444	3,774,663	35.10	98.00	32.81	3.94
Richland	RIC03	Fort Jackson	B1699 - CEP#3 Boilers #1,2&3	2.65E+01	505,324	3,761,356	55.00	445.00	0.03	3.00
Richland	RIC04	Fort Jackson	B1699 - CEP#3 Old Boilers #1,2,&3	-1.80E+02	505,324	3,761,356	55.00	445.00	0.03	3.00
Richland	RIC05	Fort Jackson	B1701 - Boiler & Diesel Engine	7.57E-02	505,535	3,761,593	15.00	350.00	0.03	0.83
Richland	RIC06	Fort Jackson	B2100 - Boiler	6.00E-03	503,836	3,762,104	44.00	200.00	0.03	1.30
Richland	RIC07	Fort Jackson	B2288 - CEP#1 Boilers #1,2,&3	5.02E+00	504,405	3,762,491	55.00	350.00	0.03	3.70
Richland	RIC08	Fort Jackson	B2288 - CEP#1 Old Boilers #1,2&3	-2.71E+02	504,405	3,762,491	55.00	350.00	0.03	3.70
Richland	RIC09	Fort Jackson	B4333 - CEP#2 Boilers #1-#5	6.58E+01	505,253	3,763,632	55.00	300.00	0.03	3.72
Richland	RIC10	Fort Jackson	B4333 - CEP#2 Old Boilers #1-#5	-3.92E+02	505,253	3,763,632	55.00	350.00	0.03	3.72
Richland	RIC11	Fort Jackson	CEP3CHL - CEP #3 Chiller	1.00E-03	505,324	3,761,356	20.00	300.00	0.03	9.56
Richland	RIC12	Fort Jackson	H032E - Boiler	3.30E-02	506,931	3,764,149	46.50	350.00	0.03	3.00
Richland	RIC13	Cardinal Stabilizers	Boiler 1 800hp	1.69E+01	501,571	3,757,465	30.00	538.00	41.70	2.00
Richland	RIC14	Cardinal Stabilizers	Boiler 2 300hp	5.04E+00	501,571	3,757,465	25.00	325.00	20.50	1.50
Richland	RIC15	Cardinal Stabilizers	Boiler 4 800hp	1.69E+01	501,571	3,757,465	30.00	538.00	41.70	2.00
Richland	RIC16	Cardinal Stabilizers	Boiler 3 400hp	-6.79E+00	501,571	3,757,465	25.00	325.00	20.50	1.50
Richland	RIC17	Palmetto Baptist Medical Center	Boiler #1	7.54E+00	496,930	3,762,909	99.50	400.00	3.17	9.00
Richland	RIC18	Palmetto Baptist Medical Center	Boiler #3	7.54E+00	496,930	3,762,909	99.50	400.00	3.17	9.00
Richland	RIC19	Palmetto Baptist Medical Center	Boiler #4	9.00E-03	496,930	3,762,909	127.00	400.00	0.03	1.66
Richland	RIC20	Palmetto Baptist Medical Center	Old Boiler #1	-1.06E+01	496,930	3,762,909	140.00	475.00	12.02	3.66
Richland	RIC21	Palmetto Baptist Medical Center	Old Boiler #3	-1.06E+01	496,930	3,762,909	140.00	475.00	12.02	3.66
Richland	RIC22	International Paper - Eastover (formerly Union	No. 1 Smelt Dissolving Tank	3.50E+00	533,376	3,749,431	249.00	169.00	21.33	4.60
Richland	RIC23	International Paper - Eastover (formerly Union	No. 2 Smelt Dissolving Tank	7.80E+00	533,394	3,749,465	249.00	172.00	27.56	5.90
Richland	RIC24	International Paper - Eastover (formerly Union	No. 2 NCG Incin/No. 2 RecFurn	1.12E+03	533,363	3,749,523	463.00	370.00	50.85	14.11
Richland	RIC25	International Paper - Eastover (formerly Union	No. 1 RecFurn/No. 1 Power Boiler	1.38E+03	533,311	3,749,506	282.50	367.00	56.43	13.45
Richland	RIC26	International Paper - Eastover (formerly Union	No. 2 Power Boiler	9.64E+02	533,259	3,749,490	463.00	377.00	68.24	9.50
Richland	RIC27	International Paper - Eastover (formerly Union	No. 1 Lime Kiln	9.20E+00	533,484	3,749,711	177.00	134.00	35.00	5.90
Richland	RIC28	International Paper - Eastover (formerly Union	No. 2 Lime Kiln	1.31E+01	533,486	3,749,770	177.00	473.00	70.00	5.90
Richland	RIC29	Richland Memorial Hospital	Boiler 2-600HP	1.28E+01	497,000	3,765,123	30.00	395.00	0.03	4.00
Richland	RIC30	Richland Memorial Hospital	Boiler 3-800HP	1.70E+01	497,000	3,765,123	35.50	395.00	19.73	2.00
Richland	RIC31	Richland Memorial Hospital	Removed boiler-1250HP	-1.37E+02	497,000	3,765,123	36.00	410.00	7.73	4.00
Richland	RIC32	SC Dept of Corrections	Boiler #1&2	-1.19E+02	489,224	3,767,966	20.00	450.00	35.32	2.41
Richland	RIC33	Springs Industries - Olympia	Boiler #1&2	4.62E+01	496,044	3,760,000	175.00	360.00	1.90	8.00
Richland	RIC34	USC Central Energy Facilities	West Boiler #1	1.70E+01	497,229	3,761,192	44.00	475.00	37.63	2.50
Richland	RIC35	USC Central Energy Facilities	West Boiler #2	2.76E+01	497,229	3,761,192	46.00	475.00	14.70	4.00
Richland	RIC36	USC Central Energy Facilities	East Boiler #1	1.72E+01	497,768	3,761,777	50.00	374.00	14.00	4.00
Richland	RIC37	USC Central Energy Facilities	East Boiler #2	1.72E+01	497,768	3,761,777	50.00	374.00	14.00	4.00
Richland	RIC38	USC Central Energy Facilities	East Boiler #3	1.72E+01	497,768	3,761,777	50.00	374.00	35.90	2.50
Richland	RIC39	USC Central Energy Facilities	BLR13_14 - Arnold School of Public	1.20E-02	497,229	3,761,192	60.00	300.00	0.03	1.70
Richland	RIC40	USC Central Energy Facilities	BLR21_22 - Colonial Center	8.00E-03	497,229	3,761,192	56.00	300.00	0.03	3.00
Richland	RIC41	USC Central Energy Facilities	Biomass Gasifier Boiler System	2.70E+00	496,408	3,760,976	70.00	295.00	56.67	6.00

Table A-1. Regional Inventory Sources

County	ID	Company Name	Stack Details	SO_2 Emissions (lb/hr)	UTM East (m)	UTM North (m)	Height (ft)	Temp °F	Modeled Velocity (ft/s)	Diameter (ft)
Richland	RIC42	USC Central Energy Facilities	Old East Boiler #1	-2.15E+01	497,768	3,761,777	50.00	374.00	14.00	4.00
Richland	RIC43	USC Central Energy Facilities	Old East Boiler #2	-2.15E+01	497,768	3,761,777	50.00	374.00	14.00	4.00
Richland	RIC44	USC Central Energy Facilities	Old East Boiler #3	-2.76E+01	497,768	3,761,777	50.00	374.00	35.90	2.50
Richland	RIC45	USC Central Energy Facilities	Old West Boiler #1	-2.76E+01	497,229	3,761,192	44.00	475.00	37.63	2.50
Richland	RIC46	Office of General Services energy fac.	Old Boiler No. 1	-7.51E+00	494,870	3,762,948	45.50	325.00	0.03	3.00
Richland	RIC47	Office of General Services energy fac.	Old Boiler No. 2	-7.51E+00	494,870	3,762,948	45.50	325.00	0.03	3.00
Richland	RIC48	Office of General Services energy fac.	New Boiler No. 1	1.70E+01	494,870	3,762,950	45.00	390.00	55.50	2.00
Sumter	SUM01	Santee Print Works	Stack 130 Bleach Range	1.40E-02	563,395	3,753,426	23.20	350.00	0.03	43.60
Sumter	SUM02	Santee Print Works	Stack 44 Boiler 4	3.47E+02	563,395	3,753,426	90.00	450.00	30.00	5.00
Sumter	SUM03	Santee Print Works	Stack 106 Finish A	9.63E-03	563,395	3,753,426	45.00	350.00	15.10	2.00
Sumter	SUM04	Santee Print Works	Stack 108 Finish B	1.28E-02	563,395	3,753,426	36.70	350.00	0.03	30.87
Sumter	SUM05	Santee Print Works	Stack 53 SCR PRT	2.00E-02	563,395	3,753,426	34.70	350.00	0.03	64.00
Sumter	SUM06	Santee Print Works	Stack 74 ASD	6.00E-03	563,395	3,753,426	37.20	350.00	0.03	50.60
Sumter	SUM07	Santee Print Works	Stack 79 Tint/Dye	7.00E-03	563,395	3,753,426	35.50	350.00	0.03	43.40
Sumter	SUM08	Santee Print Works	Stack 69 Space Heater	5.00E-03	563,395	3,753,426	36.20	350.00	0.03	27.90
Sumter	SUM09	City of Sumter	Stack 1	1.00E-02	563,169	3,745,078	65.00	130.00	49.00	1.25
Florence	FLO28	Dupont-Florence	Boiler #3	3.10E+02	630,885	3,784,747	125.00	350.00	26.80	5.00
Florence	FLO29	Dupont-Florence	Dow Vaporizer 1	7.40E+00	630,830	3,784,790	125.00	500.00	15.20	3.44
Florence	FLO30	Dupont-Florence	Dow Vaporizer 2	7.40E+00	630,835	3,784,795	125.00	500.00	15.20	3.44
Florence	FLO31	Dupont-Florence	Dow Vaporizer 3	3.60E+01	630,848	3,784,778	125.00	500.00	7.61	3.44
Florence	FLO32	Dupont-Florence	Dow Vaporizer 4	3.60E+01	630,855	3,784,771	125.00	500.00	7.61	3.44
Florence	FLO33	Dupont-Florence	Dow Vaporizer 5	3.60E+01	630,863	3,784,764	125.00	500.00	7.61	3.44
Florence	FLO34	Dupont-Florence	Old Oil Boiler	-2.24E+02	630,841	3,784,804	125.00	350.00	26.60	5.00
Florence	FLO35	Dupont-Florence	Vaporizer 1&2 (pre-mSBD)	-5.73E+01	630,830	3,784,790	125.00	500.00	15.20	3.44
Florence	FLO36	Dupont-Florence	Vaporizer 3 (pre-mSBD)	-2.86E+01	630,848	3,784,778	125.00	500.00	19.00	3.44
Florence	FLO37	Dupont-Florence	Vaporizer 4 (pre-mSBD)	-2.86E+01	630,855	3,784,771	125.00	500.00	19.00	3.44
Florence	FLO38	Dupont-Florence	Package Boiler #1	3.18E+01	630,896	3,784,768	55.00	350.00	55.00	3.33
Florence	FLO39	Dupont-Florence	Package Boiler #2	3.18E+01	630,896	3,784,768	55.00	350.00	55.00	3.33
Bladen	BLA01	Browns of Carolina		2.87E+01	699,015	699,015	23.00	300.00	34.50	34.50
Bladen	BLA02	Carolina Food Processors		6.63E+01	700,119	700,119	60.00	364.00	78.20	78.20
Robeson	ROB01	Cogentrix of NC		6.46E+02	682,944	682,944	150.00	323.00	5.00	5.00
Robeson	ROB02	West Point Pepperell		8.65E+01	682,162	682,162	45.00	143.00	0.03	0.03

1. Volume and Area sources are listed in Italics. The parameters listed correspond to the appropriate volume and area source inputs.
2. Florence county sources FLO28 - FLO39 are included in the North Carolina model runs.

Table A-2. Sea Salt Concentrations at Cape Romain

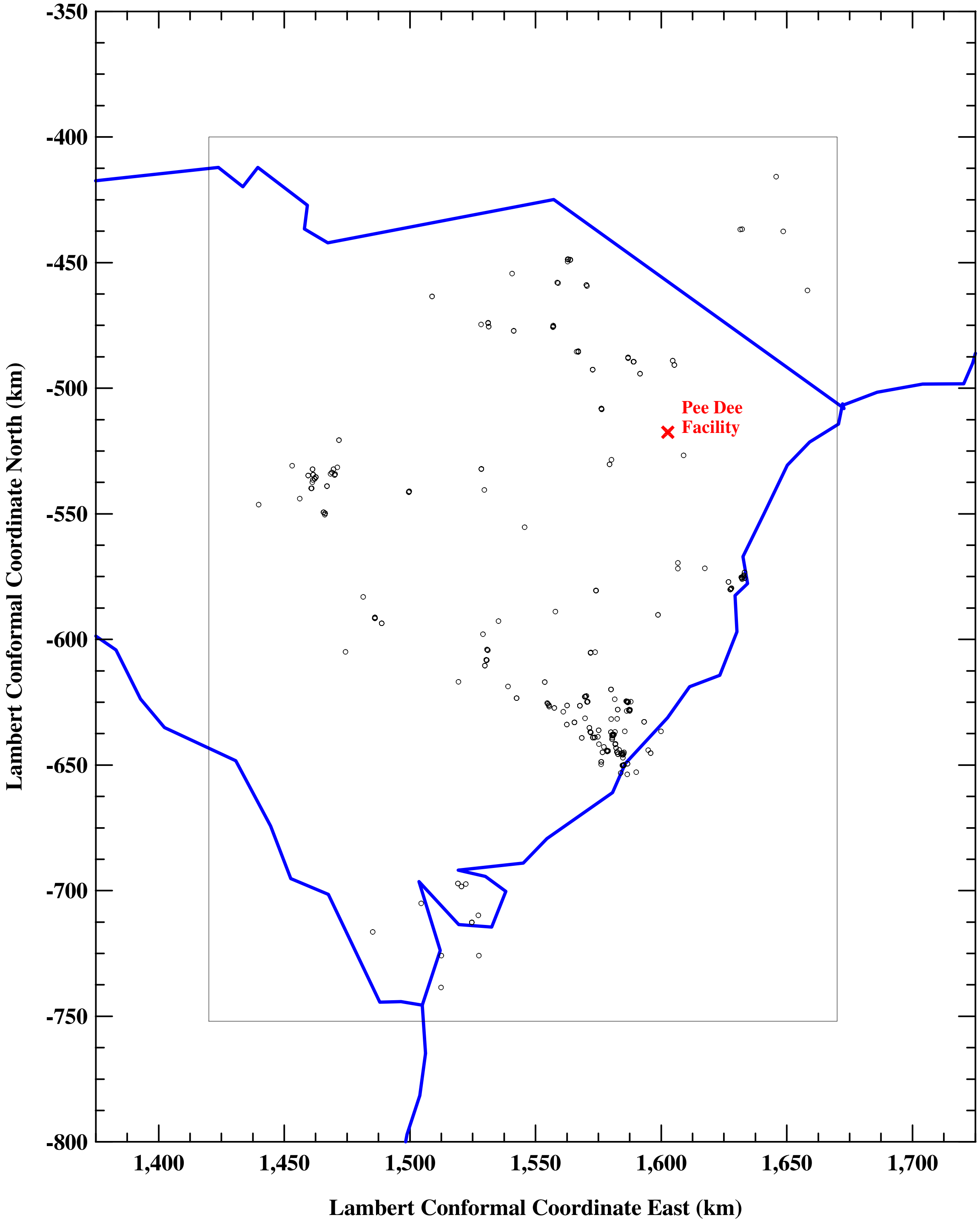
Month	Na Concentration ($\mu g/m^3$)	NaCl Concentration ($\mu g/m^3$)	f(RH) by Month[1]	Soil Concentration ($\mu g/m^3$)	Soil + NaCl Concentration ($\mu g/m^3$)
Jan-01	0.19	0.479	3.3	0.50	**2.08**
Feb-01	0.26	0.665	3.0	0.50	**2.49**
Mar-01	0.76	1.937	2.9	0.50	**6.12**
Apr-01	0.52	1.320	2.8	0.50	**4.20**
May-01	0.49	1.255	3.2	0.50	**4.51**
Jun-01	0.24	0.611	3.7	0.50	**2.76**
Jul-01	0.29	0.732	3.6	0.50	**3.13**
Aug-01	0.25	0.634	4.1	0.50	**3.10**
Sep-01	0.29	0.748	4.0	0.50	**3.49**
Oct-01	0.32	0.816	3.7	0.50	**3.52**
Nov-01	0.59	1.499	3.4	0.50	**5.60**
Dec-01	0.55	1.397	3.2	0.50	**4.97**
Jan-02	0.43	1.094	3.3	0.50	**4.11**
Feb-02	0.77	1.962	3.0	0.50	**6.39**
Mar-02	0.41	1.052	2.9	0.50	**3.55**
Apr-02	0.59	1.489	2.8	0.50	**4.67**
May-02	0.42	1.067	3.2	0.50	**3.91**
Jun-02	0.32	0.821	3.7	0.50	**3.54**
Jul-02	0.63	1.613	3.6	0.50	**6.31**
Aug-02	0.26	0.656	4.1	0.50	**3.19**
Sep-02	0.36	0.917	4.0	0.50	**4.17**
Oct-02	0.29	0.735	3.7	0.50	**3.22**
Nov-02	0.17	0.424	3.4	0.50	**1.94**
Dec-02	0.19	0.473	3.2	0.50	**2.01**
Jan-03	0.17	0.427	3.3	0.50	**1.91**
Feb-03	0.28	0.713	3.0	0.50	**2.64**
Mar-03	0.23	0.583	2.9	0.50	**2.19**
Apr-03	0.12	0.308	2.8	0.50	**1.36**
May-03	1.02	2.603	3.2	0.50	**8.83**
Jun-03	0.60	1.535	3.7	0.50	**6.18**
Jul-03	0.51	1.290	3.6	0.50	**5.14**
Aug-03	0.35	0.900	4.1	0.50	**4.19**
Sep-03	0.21	0.546	4.0	0.50	**2.68**
Oct-03	0.21	0.543	3.7	0.50	**2.51**
Nov-03	0.24	0.612	3.4	0.50	**2.58**
Dec-03	0.15	0.375	3.2	0.50	**1.70**

1. Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Program/ EPA-454/B-03-05 September 2003, Table A-3.

APPENDIX B

SUPPORTING FIGURES

FIGURE B-1. Regional Inventory

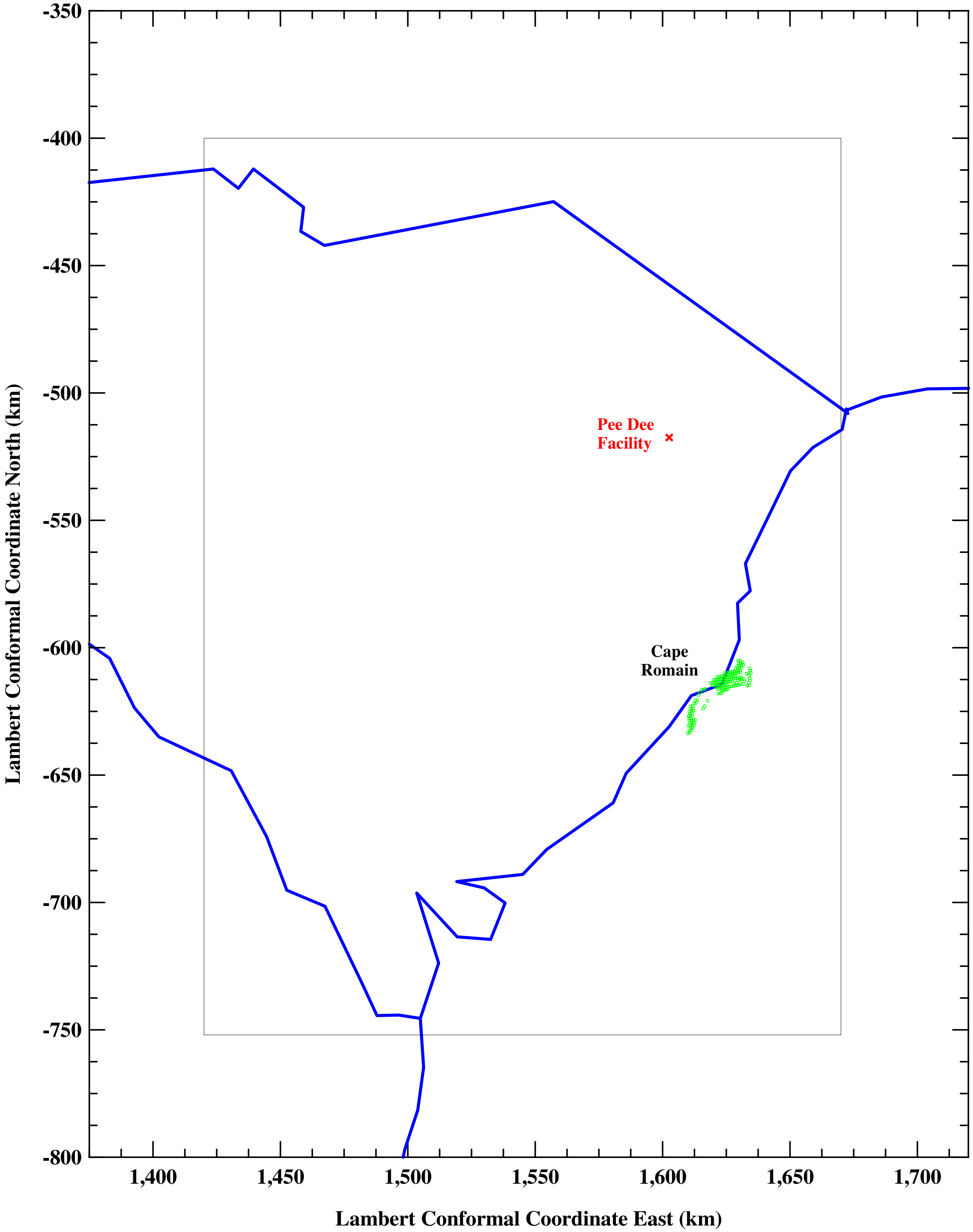


Edge Markings in Lambert Conformal Coordinates
LCC Origin: 40.0N 97.0 W

Trinity Consultants

Santee Cooper
051101.0107
Figure B-1 Regional Inventory.srf

FIGURE B-2. Domain and Receptors

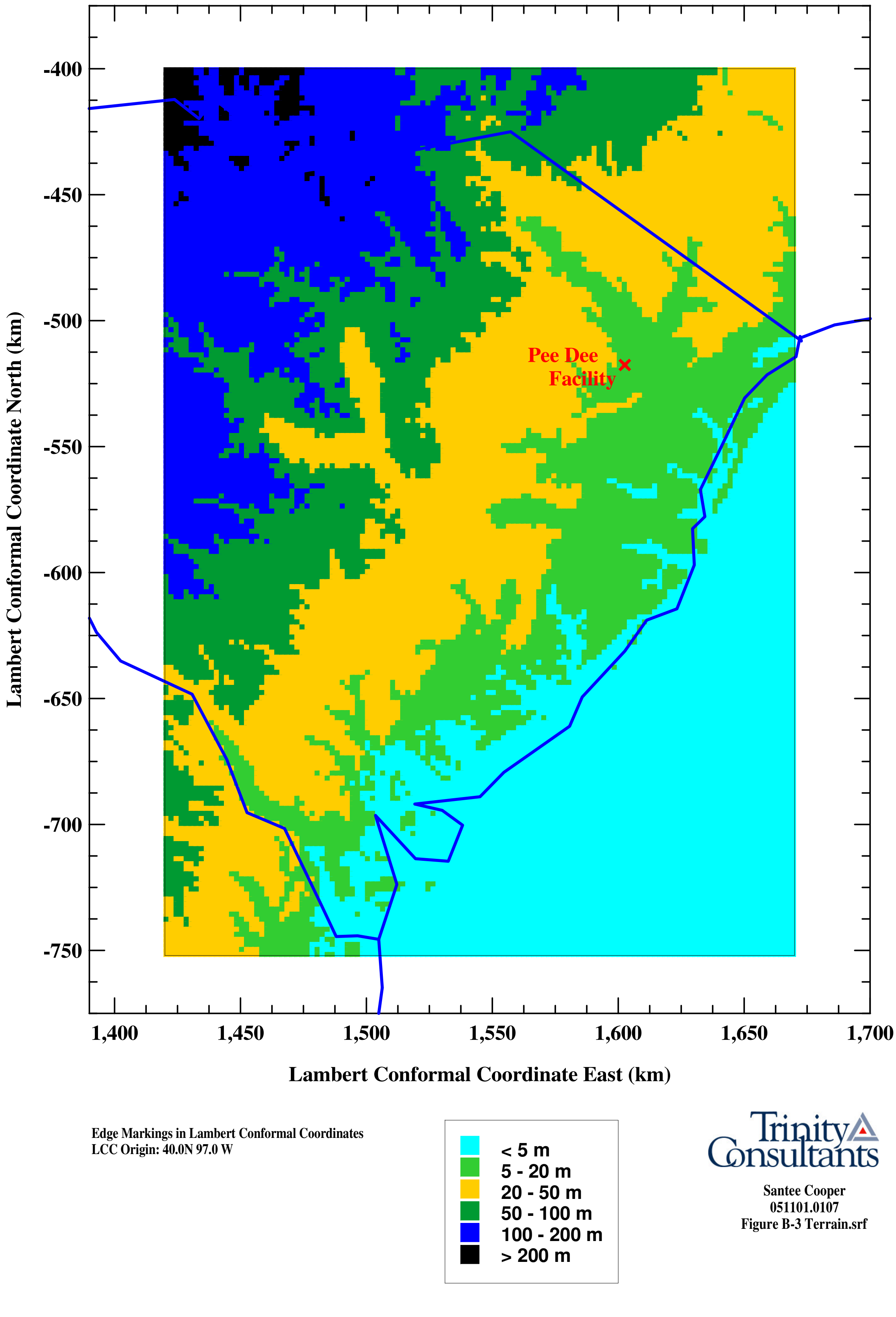


Edge Markings in Lambert Conformal Coordinates
LCC Origin: 40.0N 97.0 W

Trinity Consultants

Santee Cooper
051101.0107
Figure B-2 Domain and Receptors.srf

FIGURE B-3. Terrain

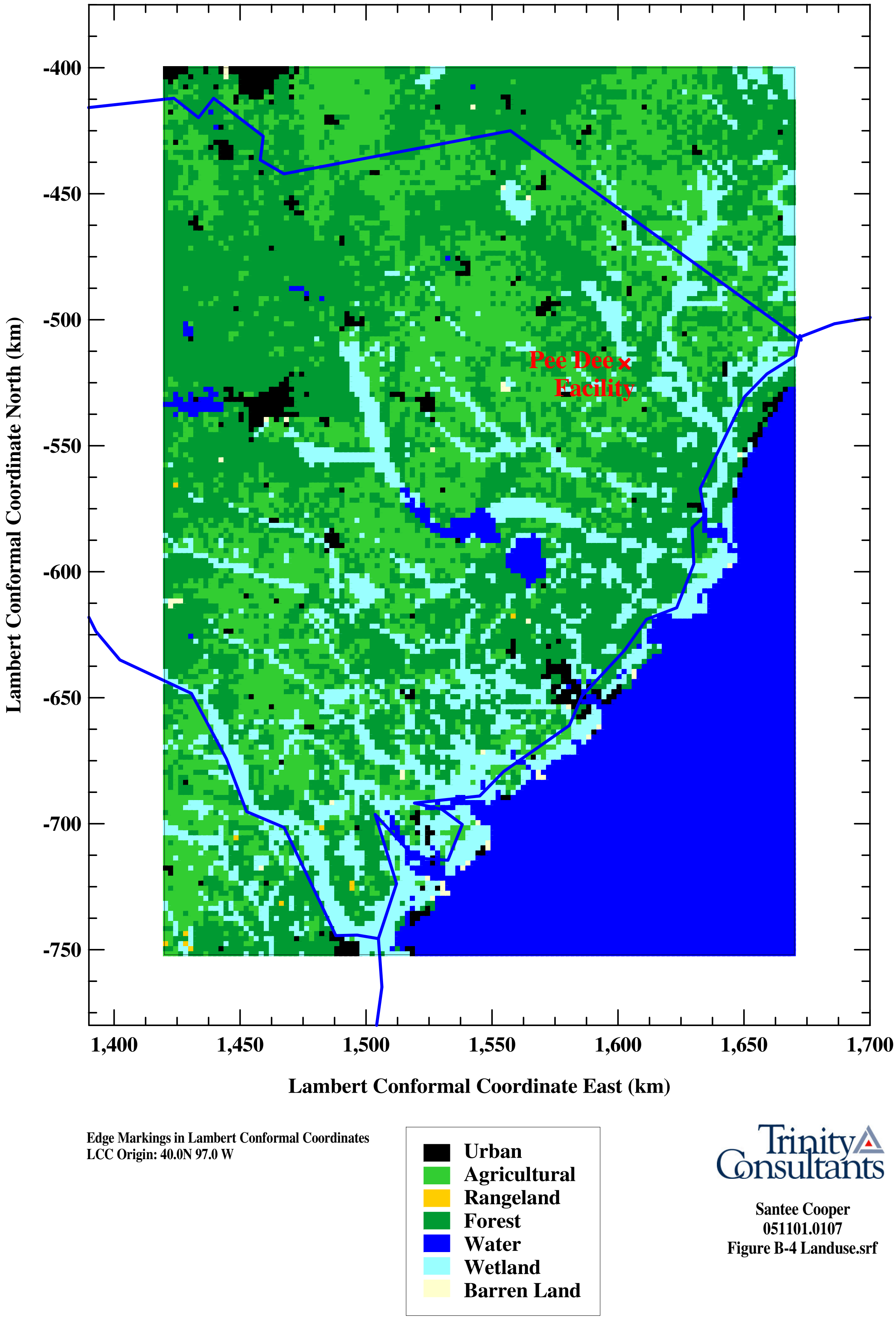


Edge Markings in Lambert Conformal Coordinates
LCC Origin: 40.0N 97.0 W

Trinity Consultants

Santee Cooper
051101.0107
Figure B-3 Terrain.srf

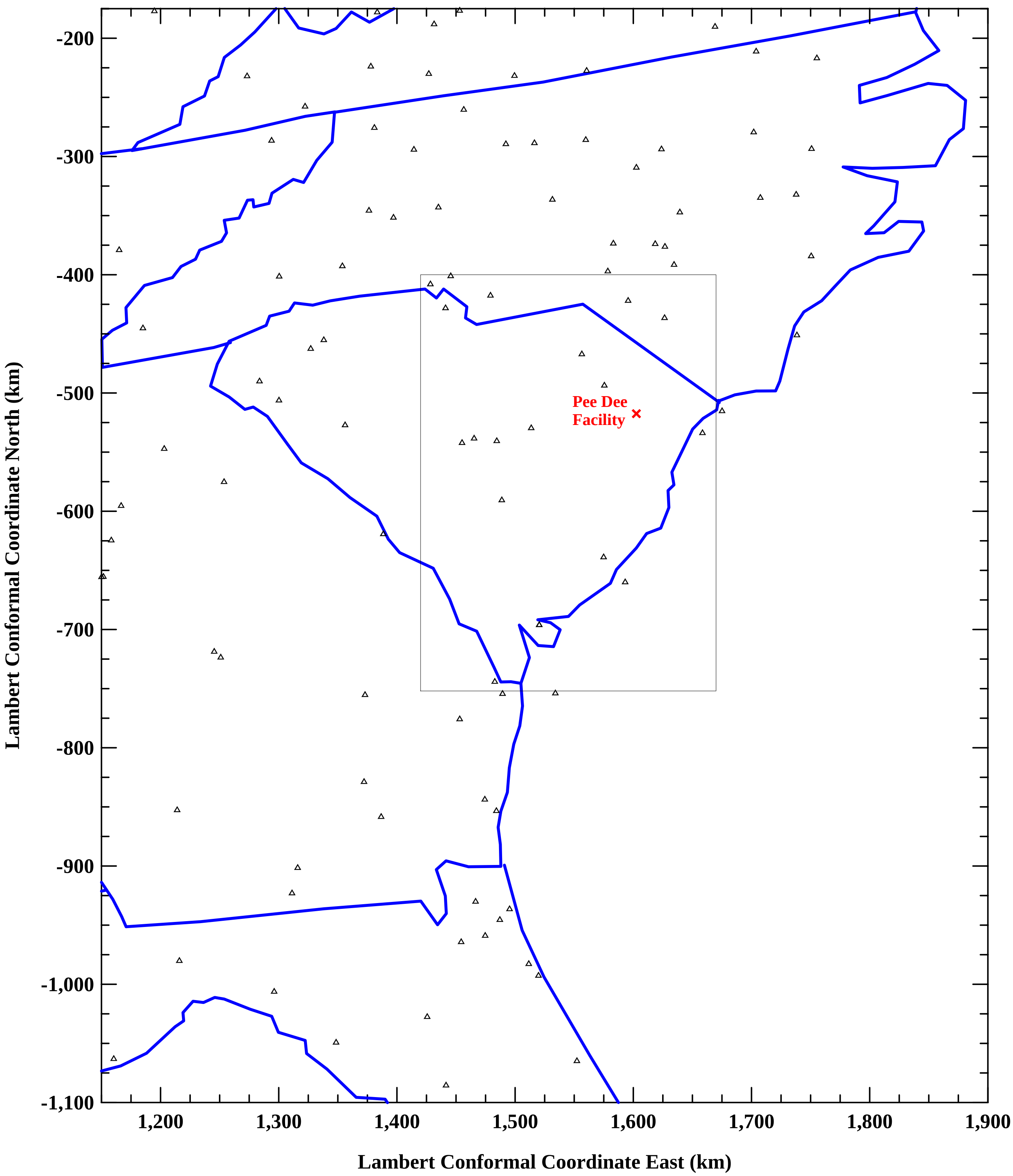
FIGURE B-4. Landuse



Trinity Consultants

Santee Cooper
051101.0107
Figure B-4 Landuse.srf

FIGURE B-5. Meteorological Surface Stations



Edge Markings in Lambert Conformal Coordinates
LCC Origin: 40.0N 97.0 W

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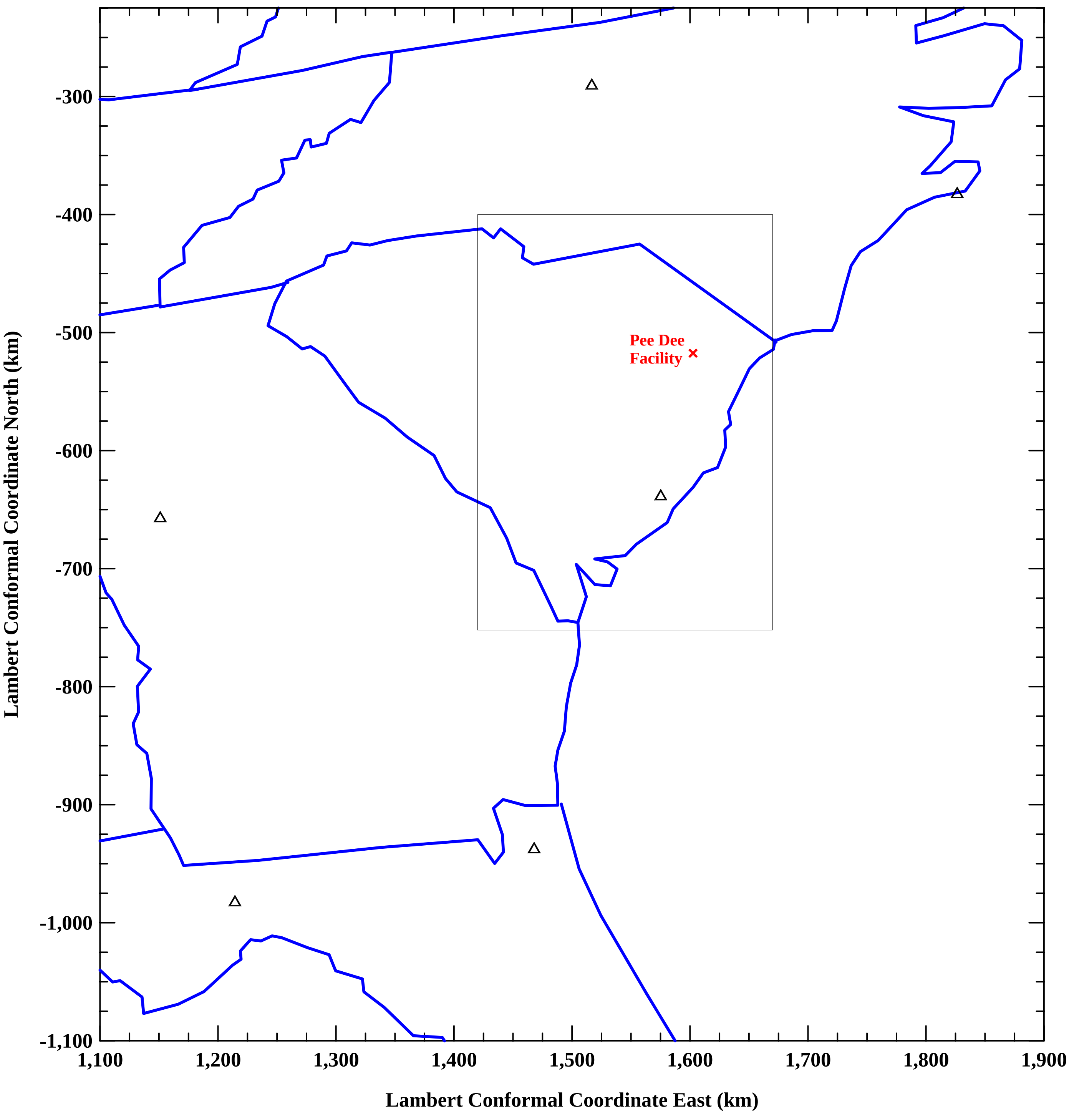
Figure B-5 Met Sfc Stations.srf

FIGURE B-6. Meteorological
Upper Air Stations



Edge Markings in Lambert Conformal Coordinates
LCC Origin: 40.0N 97.0 W

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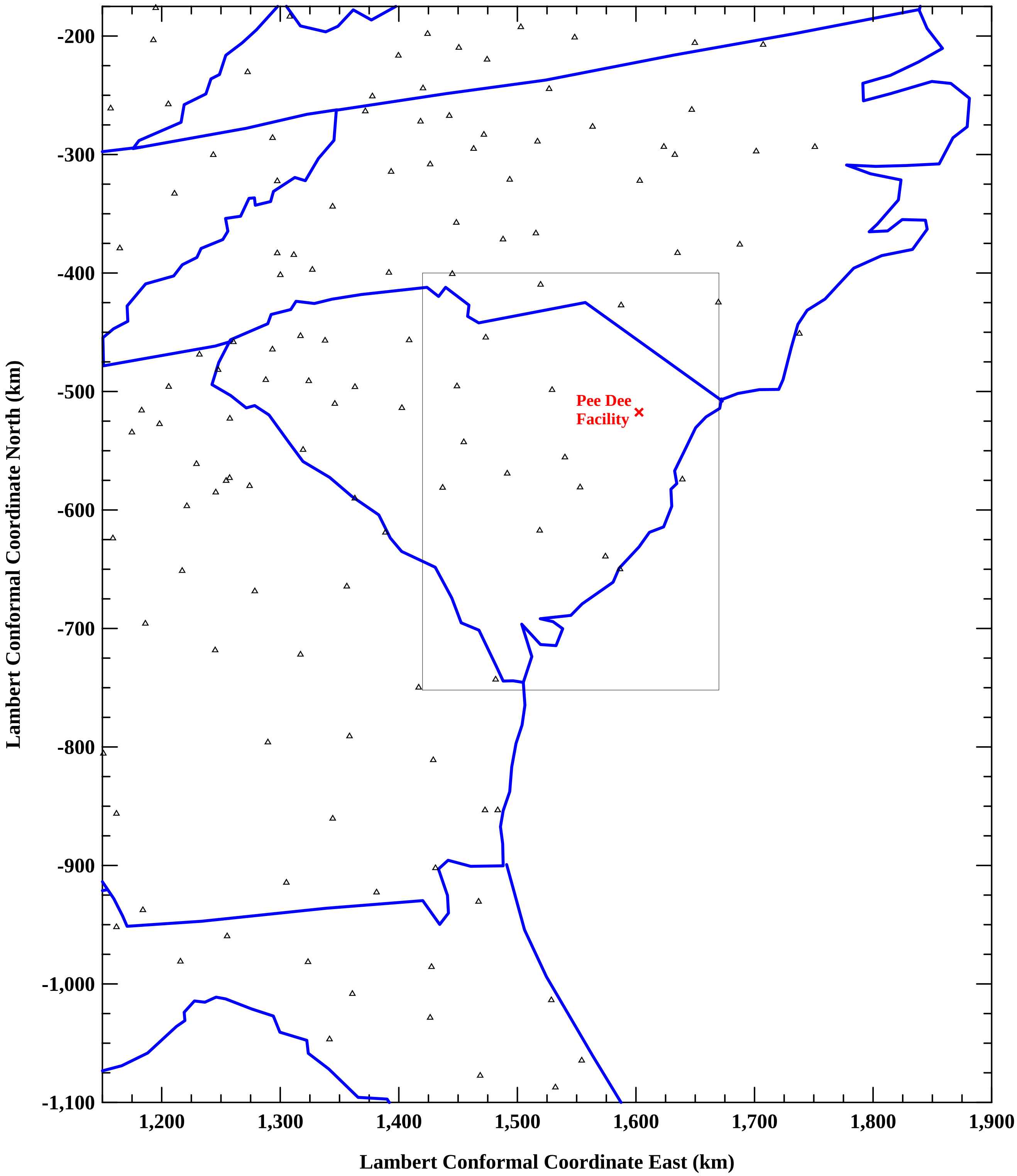
Figure B-6 Met UA Stations.srf

FIGURE B-7. Precipitation Stations



Edge Markings in Lambert Conformal Coordinates
LCC Origin: 40.0N 97.0 W

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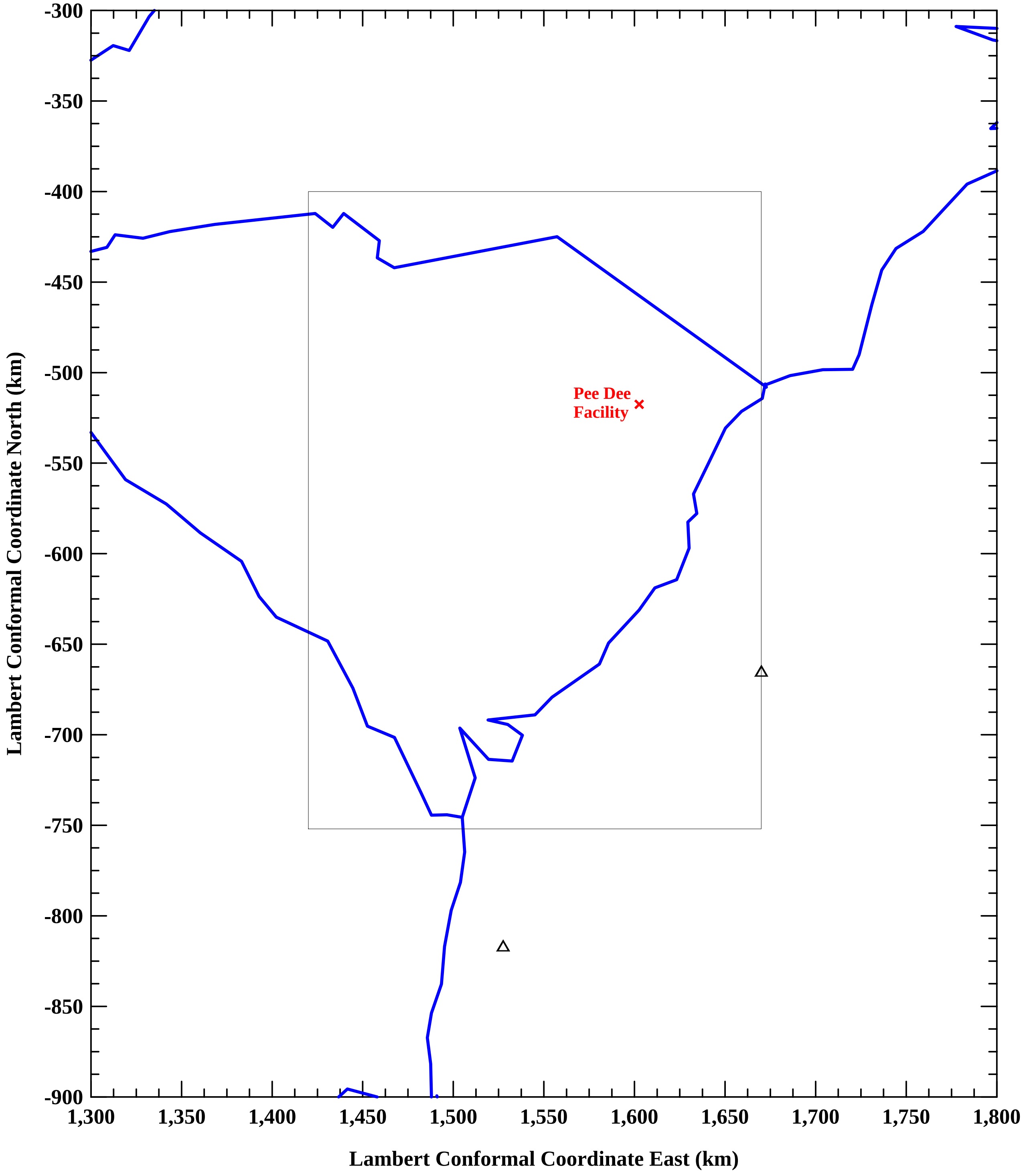
Figure B-7 Precip Stations.srf

FIGURE B-8. Overwater Stations



Edge Markings in Lambert Conformal Coordinates
LCC Origin: 40.0N 97.0 W

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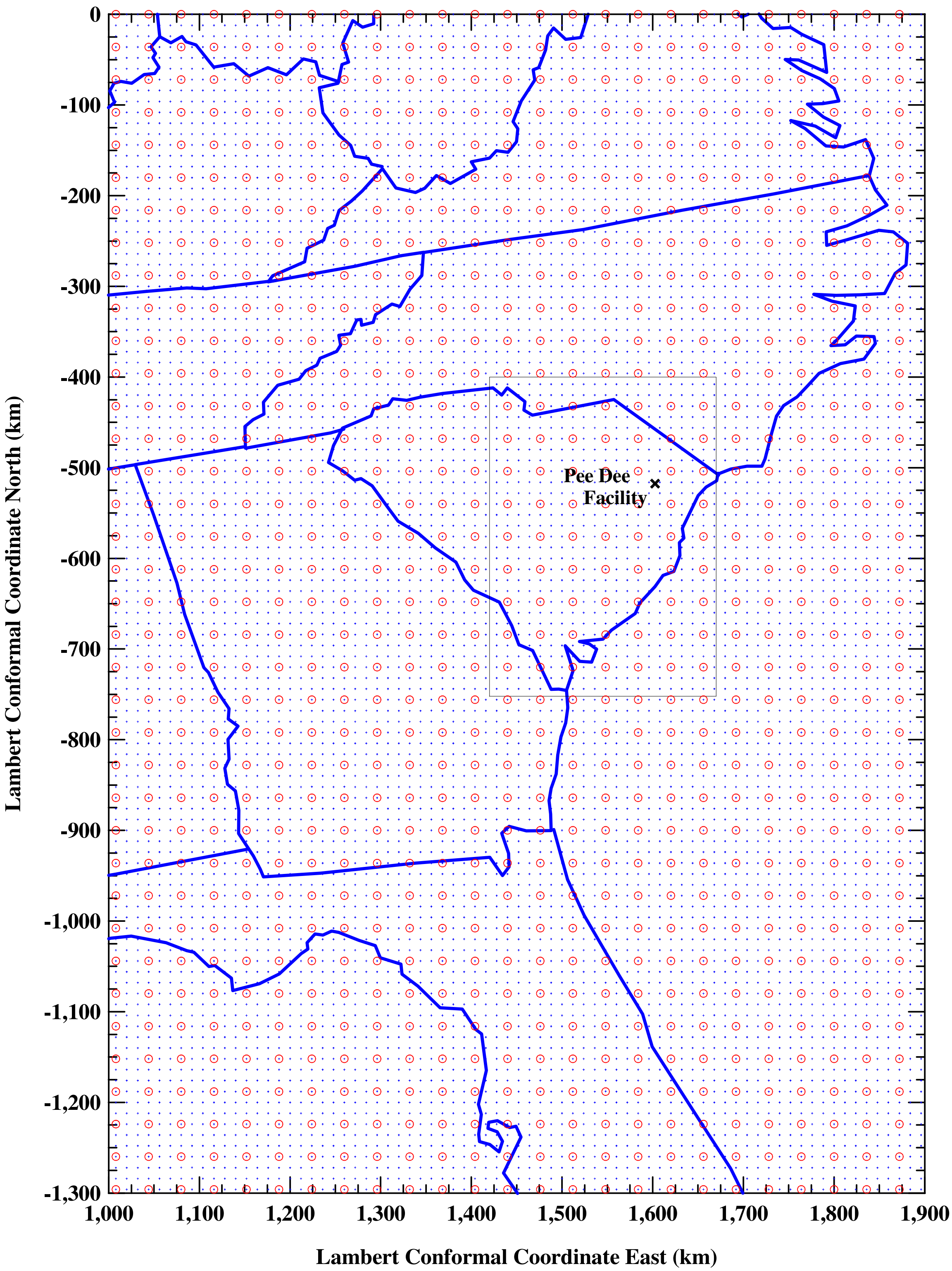
Figure B-8 Overwater Stations.srf

FIGURE B-9. MM Data Points



Edge Markings in Lambert Conformal Coordinates
LCC Origin: 40.0N 97.0 W

○ 2003 MM Data
+ 2001 and 2002 MM Data

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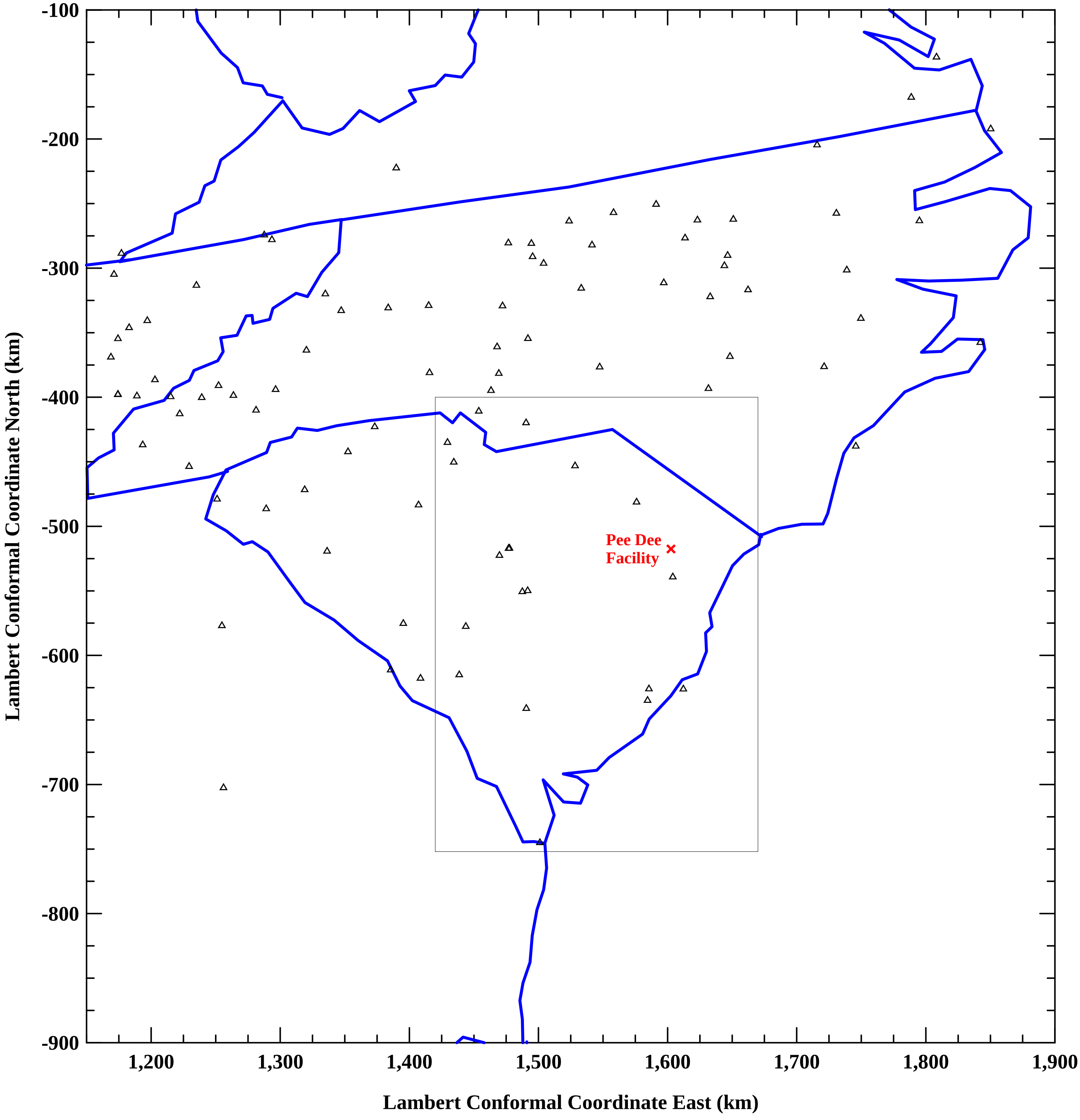
Figure B-9 MM Data Points.srf

FIGURE B-10. Ozone Stations



Edge Markings in Lambert Conformal Coordinates
LCC Origin: 40.0N 97.0 W

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Figure B-10 Ozone Stations.srf

APPENDIX C

ELECTRONIC MODELING FILES